FINAL REPORT

Lenz Oil Settling Respondents

Remedial Investigation Report
Lenz Oil Service, Inc. Site
Lemont, Illinois

Volume 6 of 6

Revision 1

October 1992

Project No. 0252

Environmental Resources Management-North Central, Inc.
540 Lake Cook Road, Suite 300
Deerfield, Illinois 60015

ERM

FINAL REPORT

Lenz Oil Settling Respondents

Remedial Investigation Report
Lenz Oil Service, Inc. Site
Lemont, Illinois

Volume 6 of 6

Revision 1

October 1992

Project No. 0252

Environmental Resources Management-North Central, Inc.
540 Lake Cook Road, Suite 300
Deerfield, Illinois 60015

APPENDIX O

APPENDIX O

QUALITY ASSURANCE REVIEW OF PHASE I GROUND WATER AND NAPL RESULTS

Environmental Standards, Inc.

Specialists in Environmental Risk Assessment
Hydrogeology and Data Validation

QUALITY ASSURANCE REVIEW

OF THE LENZ OIL SITE

June 28, 1991

Prepared for:

ERM-NORTH CENTRAL, INC.
102 Wilmot Road
Suite 300
Deerfield, IL 60015

Prepared by:

ENVIRONMENTAL STANDARDS, INC.
1220 Valley Forge Road
P.O. Box 911
Valley Forge, PA 19481

Environmental Standards, Inc.

Specialists in Environmental Risk Assessment, Hydrogeology and Data Validation

[illegible]

QUALITY ASSURANCE REVIEW

OF THE LENZ OIL SITE

June 28, 1991

Prepared for:

ERM-NORTH CENTRAL, INC.
102 Wilmot Road
Suite 300
Deerfield, IL 60015

Prepared by:

ENVIRONMENTAL STANDARDS, INC.
1220 Valley Forge Road
P.O. Box 911
Valley Forge, PA 19481

TABLE OF CONTENTS

Introduction

This quality assurance review is based upon a review of all data generated from the 35 samples which were collected from May 2 through May 9, 1991 as part of the Lenz Oil RI/FS. The samples that have undergone a rigorous quality assurance review are listed on Table 1.

This review has been performed with guidance from the "Functional Guidelines for Evaluating Organics Analyses" (U.S. EPA, 1988) and the "Functional Guidelines for Evaluating Inorganics Analyses" (U.S. EPA, 1988).

The reported analytical results are presented as a summary of the data in Section 2. Data were examined to determine the usability of the analytical results and also to determine contractual compliance relative to analytical requirements and data package deliverables specified in the EPA's Contract Laboratory Program (CLP) protocols. Qualifier codes have been placed next to results so that the data user can quickly assess the qualitative and/or quantitative reliability of any result. Details of this quality assurance review are presented in the narrative section of this report. This report was prepared to provide a critical review of the laboratory analyses and reported chemical results. Rigorous quality assurance reviews of laboratory-generated data routinely identify various problems associated with analytical measurements, even from the most experienced and capable laboratories. The nature and extent of problems identified in this critical review should not be interpreted to mean that those results that do not have qualifier codes are less than valid.

TABLE 1

SAMPLES INCLUDED IN THIS QUALITY ASSURANCE REVIEW

ERM-North Central Sample Number	Laboratory Sample Number	Date of Sample Collection	Fractions Analyzed
LO-1G102D-GW	111897-1	5/6/91	V, S, P, M, CN
LO-1G102L-GW	111897-2	5/6/91	V, S, P, M, CN
LO-1G101D-GW	111897-3	5/6/91	V, S, P, M, CN
LO-1G101M-GW	111897-4	5/6/91	V, S, P, M, CN
LO-1G101L-GW	111897-5	5/6/91	V, S, P, M, CN
LO-1MW01D-GW	111897-6	5/6/91	V, S, P, M, CN
LO-1MW01S-GW	111897-7	5/6/91	V, S, P, M, CN
LO-1MW03S-GW	111897-8	5/6/91	V, S, P, M, CN
LO-1MW03D-GW	111897-9	5/6/91	V, S, P, M, CN
LO-1MW03S-FD	111897-10	5/6/91	V, S, P, M, CN
LO-1GW1-FB	111897-11	5/6/91	V, S, P, M, CN
LO-GW6-TB	111897-12	5/2/91	V
LO-1MW04D-GW	111908-1	5/7/91	V, S, P, M, CN
LO-1G104D-GW	111908-2	5/7/91	V, S, P, M, CN
LO-1GW2-FB	111908-3	5/7/91	V, S, P, M, CN
LO-1MW07D-GW	111908-4	5/7/91	V, S, P, M, CN
LO-1MW07S-GW	111908-5	5/7/91	V, S, P, M, CN
LO-1MW02D-GW	111908-6	5/7/91	V, S, P, M, CN
LO-1MW05S-GW	111908-7	5/7/91	V, S, P, M, CN
LO-1MW05S-FD	111908-8	5/7/91	V, S, P, M, CN
LO-1G104L-GW	111908-9	5/7/91	V, S, P, M, CN
LO-1MW05D-GW	111908-10	5/7/91	V, S, P, M, CN
LO-1G106DR-GW	111908-11	5/7/91	V, S, P, M, CN
LO-1G106DR-MS/MSD	111908-12	5/7/91	V
LO-1GW-TB1	111908-13	5/7/91	V

TABLE 1 (Cont.)

ERM-North Central Sample Number	Laboratory Sample Number	Date of Sample Collection	Fractions Analyzed
LO-1MW06D-GW	111918-1	5/8/91	V, S, P, M, CN
LO-1MW04S-FD	111918-2	5/8/91	V, S, P, M, CN
LO-1MW02S-GW	111918-3	5/8/91	V, S, P, M, CN
LO-1GW3-FB	111918-4	5/8/91	V, S, P, M, CN
LO-1MW06S-GW	111918-5	5/8/91	V, S, P, M, CN
LO-1MW04S-GW	111918-6	5/8/91	V, S, P, M, CN
LO-1MW02S-MS/MSD	111918-7	5/8/91	V
LO-1GW-TB	111918-8	5/8/91	V
LO-1G106S-WO	111928-1	5/9/91	V, S, P, M*, CN
LO-1GW-TB3	111928-2	5/2/91	V

NOTES:

V	TCL Volatile Organic Compounds
S	TCL Semivolatile Organic Compounds
P	TCL Pesticide/PCB Organic Compounds
M*	Total Metals Only
M	Total and Dissolved Metals
CN	Total Cyanide

Section 1 Quality Assurance Review

A. Organic Data

The organic analysis of 35 aqueous samples and one oil sample was performed by Applied Research and Development Laboratories, Inc. of Mt. Vernon, Illinois. This data set was provided in four separate data packages and the samples are listed on Table 1. The samples were analyzed by CLP protocols collectively for the Target Compound List (TCL) volatile organic compounds, the TCL base/neutral/acid extractable compounds and the TCL pesticides/PCBs. In addition, mass spectral library searches were performed on up to 30 extraneous chromatographic peaks for the volatile and semivolatile GC/MS analyses combined. The findings offered in this report are based upon a rigorous review of holding times, blank analysis results, surrogate and matrix spike recoveries, analytical sequence, GC/MS tuning, system performance, target compound matching quality, calibrations, internal standard areas, quantitation of positive results and Tentatively Identified Compounds (TICs). The analytical results are provided in Section 2.

Overall, the organic data quality was good; however, a portion of the data was qualified or rejected. Contractual criteria and reporting requirements were met for the data package with the exception of the following. It should be emphasized that the following items are contractual in nature and do not necessarily affect data usability. Usability is addressed separately.

Correctable Deficiencies

1. The laboratory originally reported m-xylene and o- & p-xylene on the sample Form I's in cases 111897, 111918 and 111908. Per CLP protocol, the total concentration of both isomers should be reported as total xylenes on the Form I data sheets. The laboratory has reissued Form I's with the appropriate description.

2. The mass listings and bar graph spectra for all of the BFB and DFTPP tunes of this data set were not labeled with the date or time of analysis as required by CLP protocol (SOW288, B-13 and B-17).

3. A very large peak elutes within the first 2 minutes of the analytical run in the volatile and semivolatile chromatograms of all samples. Although this peak is most likely due to a an air leak (carbon dioxide) or a solvent front, it is greater than 10% of the area of the associated internal standard and should have been library searched per CLP protocol (SOW288, E-26 and E-45).

4. Per CLP protocol, tabulated results of matrix spiked TCL compounds are not to be reported on the matrix spike and matrix spike duplicate Form I's (SOW288, B-14, B-18 and B-21). The laboratory reported both spiked and nonspiked TCL compounds on the Form I's for all fractions.

5. Several discrepancies were observed between the date of initial calibration reported on the Form VI's and Form VII's in the volatile and semivolatile fraction and the observed date of analysis from the raw data. These discrepancies, none of which impact data usability, are summarized below.

Case	Fraction	Initial Calibration Date Reported on Form VI/Form VII	Observed Initial Calibration Date
111897	BNA	5/22/91	5/21/91
111928	VOA	6/12/91	5/19/91
111928	BNA	6/4/91	6/3/91
111928	BNA	6/11/91	6/10/91
111918	VOA	4/30/91	4/29/91
111908	VOA	5/20/91	5/19/91
111908	VOA	4/30/91	4/29/91
111908	BNA	5/22/91	5/21/91
111908	BNA	5/28/91	5/24/91
111908	BNA	5/31/91	5/29/91

6. The following minor discrepancies were observed for mass ion 365 between the reported percent abundances on the applicable semivolatile Form V's and the raw GC/MS tuning. The DFTPP raw data for mass ion 365 indicated only 2 significant digits. None of these discrepancies impact data usability.

Date/Time of Tune	Reported Abundance	Observed Abundance
5/21/91 at 14:28	1.81	1.8
5/22/91 at 9:22	1.75	1.7
5/23/91 at 14:01	1.41	1.4
6/4/91 at 13:09	2.25	2.2
6/5/91 at 9:18	2.55	2.6

Date/Time of Tune	Reported Abundance	Observed Abundance
6/11/91 at 12:17	2.42	2.4
5/30/91 at 21:11	2.17	2.2

7. The semivolatile continuing calibration check forms (Form VII) were not provided for the 50 ng standards analyzed on 6/14/91 at 17:12 (Case 111987), 6/10/91 at 21:13 and 6/11/91 at 13:33 (Case 111928), 5/29/91 at 18:33, 6/4/91 at 17:12 and 6/6/91 at 16:14 (Case 111918) and 5/26/91 at 18:32, 5/29/91 at 18:33 and 6/4/91 at 17:12 (Case 111908). For these calibrations, the laboratory analyzed samples within the same 12-hour shift that the associated initial multi-point calibration was performed. Although a Form VI was provided, this form does not demonstrate that the percent differences for the calibration check compounds are compliant with the criteria stated in the CLP protocol. Therefore, a Form VII is a required deliverable.

8. The volatile TCL compound toluene was reported below the quantitation limit as a Tentatively Identified Compound (TIC) on the semivolatile Form I's for samples LO-1G106DR-GW, LO-1G102L-GW and LO-1MW03S-FD. Furthermore, the presence of toluene in sample LO-1MW03S-FD was incorrectly reported as ethylbenzene on the TIC Form I. Only non-target compounds are to be reported as TICs per the CLP protocol.

9. Low internal standard areas were obtained for d_{12}-chrysene in samples LO-1G106S-WO and LO-1G106S-WOMS and for d_{10}-acenaphthene and d_{10}-phenanthrene in sample LO-1G106S-WODL, yet the appropriate "*" flag was not utilized as per CLP protocol (SOW288, B-37).

10. Upon review of the raw data provided for the semivolatile analysis of sample LO-1G106S-WO (oil layer), it was determined that the GPC-cleanup performed on this sample was not considered by the laboratory when calculating the positive results for this sample. Therefore, the reported results on the applicable Form I were biased low by a factor of 2. The laboratory was contacted concerning this matter and subsequently issued Form I's with the correct results. However, the laboratory failed to correct the result for dibenzofuran on the secondary Form I's. The data reviewer has reported the correct results on the sample data tables.

11. The laboratory reported a 25% recovery for the semivolatile surrogate compound 2,4,6-tribromophenol on the Form II for sample LO-1G106S-WODLRE. The data reviewer calculated a 50% recovery for this surrogate compound.

12. Several discrepancies were observed between the laboratory's reported sample identification numbers and the ERM-North Central sample identification numbers from the Chain-of-Custodies provided for this data set. Most of these discrepancies were found throughout a particular data package, whereas others were found in the Case Narrative only. These discrepancies are summarized below.

ERM-North Central Sample Number	Reported Sample Number
LO-1MW03S-FD	LO-1MW3S-FD
LO-1MW05S-FD	LO-1G105S-FD
LO-1GW-TB	LO-1GW-TB2
LO-1G101M-GW	LO-1G101W-GM
LO-1MW07S-GW	LO-1MW075-GW
LO-1MW05D-GR	LO-1MW05D-GW

Noncorrectable Deficiencies

1. Low surrogate recoveries were obtained for d_5-nitrobenzene and 2-fluorobiphenyl in the semivolatile analysis and reanalysis of sample LO-1G101L-GW. Per CLP protocol, reextraction is required if the reanalysis of the extract does not produce acceptable surrogate recoveries (SOW288, E-39).

2. A matrix spike/matrix spike duplicate analysis was not performed on the aqueous sample in Case 111928.

3. In most of the INDA and INDB calibration standards for this data set analyzed on both the primary and the confirmation columns, many of the pesticides/PCBs exhibited percent differences in excess of 15% (for quantitation) and 20% (for confirmation). In addition, many of the individual pesticides within the standards were outside the established retention time windows. Since these were closing standards, it is somewhat ambiguous in CLP protocol whether these represent true noncompliances. However, in most instances these high percent differences do not appear to affect data usability since the observed bias was in the direction of a sensitivity increase.

4. The reported result of acenaphthene in the matrix spike and matrix spike duplicate analyses of sample LO-1G106S-WO (oil layer) exceeded the calibration range of the instrument. Per CLP protocol, this sample should have been diluted (SOW288, E-43).

5. The VOA analysis of samples LO-1MW02S-GW, LO-1MW04S-GW, LO-1MW04S-GWRE, LO-1MW05S-GW, LO-1MW06S-GW, LO-1MW06D-GW, LO-1G106DR-MS/MSD, LO-1G106DR-GW, LO-1MW03S-FD-RE, LO-1MW04S-FD, LO-1MW05S-FD, LO-1MW05S-FD-RE, LO-1GW3-FB, LO-GW6-TB, LO-GW6-TB-RE, LO-1MW02S-MS/MSD, LO-1GW-TB1, LO-1GW-TB, LO-1GW-TB3 and LO-1G106S-WO (aqueous) was performed in excess of 7 days from sample collection as specified in the Lenz Oil "RI/FS Sampling and Analysis Plan" (Page T-8). In addition, the volatile matrix spike (MS)/matrix spike duplicate (MSD) analyses of Cases 111908, 111918 and 111928 were performed 26-27 days from the date of sample receipt. Furthermore, the semivolatile MS/MSD extractions in Cases 111908, 111918 and 111928 were performed 12-17 days from the date of sample receipt.

6. The semivolatile and pesticide/PCB extraction of sample LO-1G106S-WO (oil layer) was performed 3 days beyond the 5-day holding time from the date of sample receipt.

7. Based on the levels of PCB Aroclors reported in samples LO-1MW05S-GW and LO-1MW05S-FD, it appears that a GC/MS confirmation should have been attempted. SOW288 (E-63) specifies that "Any pesticide/PCB confirmed on two dissimilar GC columns must also be confirmed by GC/MS if the concentration in the final extract is sufficient for GC/MS analysis (based on the laboratory GC/MS detection limits)." Although it may be possible that the laboratory's GC/MS detection limits are above the concentrations reported in the aforementioned samples, it appears that the concentrations are sufficient for such a GC/MS confirmation.

8. According to the Chain-of-Custody provided, the analyses for TCL volatiles, TCL semivolatiles and TCL pesticides/PCBs was required for both the aqueous and oil layer of sample LO-1G106S-WO. However, it appears that the volatile analysis was not performed on the oil layer of this sample and the pesticides/PCBs analysis was not performed on the aqueous layer of this sample.

9. The semivolatile analysis of samples LO-1G101L-GW, LO-1MW05S-GW, LO-1MW05S-FD, LO-1MW06D-GW, LO-1G106S-WO and LO-1MW02S-GW revealed surrogate recoveries that necessitated reextraction/reanalysis (SOW288, E-39). However, according to the Form I's for these reanalyses, it was evident that the extraction date was the same as the initial extraction date. Based on conversations with the Laboratory Director, it appears that the extracts were merely reanalyzed and the samples were <u>not</u> reextracted. If this is the case, the semivolatile analyses for the aforementioned samples are noncompliant.

Comments

1. A two-times dilution factor at the instrument was indicated in the quantitation report for all samples analyzed for semivolatile TCL compounds. The data reviewer assumed this to be a result of the 2 milliliter combined extract per SOW288. This assumption is also corroborated by the quantitation limits reported on the Form I.

2. The Chain-of-Custody indicated that air bubbles were present in one of the volatile vials of samples LO-1G102L-GW, LO-1G104L-GW and LO-1GW-TB1. The data reviewer assumed that the volatile analysis of the samples was performed on an aliquot of sample from the vial without air bubbles present. In addition, the Chain-of-Custody indicated that air bubbles were present in both volatile vials of sample LO-1MW02S-GW.

With regard to data usability, principal areas of concern include blank contamination, surrogate recoveries, matrix spike recoveries, target compound matching quality, holding times, internal standard areas, calibrations and sample integrity. Based upon a review of the data provided, the following data qualifiers are offered. It should be noted that the following data usability issues represent an interpretation of the quality control results obtained for the project samples. Quite often, data qualifications address issues relating to sample matrix problems. Similarly, the validation guidelines routinely specify areas of the data that require qualification, yet the methods used for analysis do not require any corrective action by the laboratory. Accordingly, the following data usability issues should not necessarily be construed as an indication of laboratory performance.

Data Qualifiers

- Due to the trace-level presence of methylene chloride, toluene, total xylenes and butyl-benzyl phthalate in the laboratory, field and/or trip blanks, the reported presence of these compounds reported in samples should be considered "not-detected" and they have been flagged "U" on the sample data tables. Furthermore, results that were reported below the quantitation limit were replaced with the quantitation limit with the appropriate "U" qualifier.

Compound	Applicable Samples
methylene chloride	All positive sample results
toluene	LO-1MW01S-GW, LO-1MW03S-GW, LO-1MW03D-GW and LO-MW03S-FD

Compound	Applicable Samples
total xylenes	LO-1MW03D-GW, LO-1G102L-GW, LO-1G101D-GW and LO-1MW03S-FD
butylbenzyl phthalate	LO-1MW02S-GW and LO-1MW07S-GW

- Although there is no direct reason to question the reported results for bis(2-ethylhexyl)phthalate in samples LO-1MW02S-GW, LO-1MW05S-GW, LO-1MW05S-GWRE, LO-1MW05S-FD, LO-1MW05S-FDRE, LO-1MW05S-FDDL and LO-1G106S-WO (multiple analyses) and acetone in sample LO-1G106S-WO (aqueous), phthalate esters and acetone are extremely common laboratory and field contaminants. Accordingly, great caution should be exercised when using these results.

- The reported result for N-nitrosodiphenylamine in sample LO-1G106S-WO (aqueous and oil layer) may represent the presence of this compound and/or diphenylamine. The analysis is not capable of distinguishing between these two compounds.

- Upon review of the raw data provided, it appears that acetone may be present in sample LO-1MW05S-GW. A peak identified as acetone is indicated on the quantitation report of this sample. This peak elutes at the same relative retention time of acetone compared to the associated continuing calibration standard. However, the mass spectra for acetone in this sample was not provided. Therefore, based on the information provided, the analysis for acetone in this sample is unreliable and has been flagged "R" (compound may or may not be present) on the sample data tables.

- The actual analysis for 2-butanone in all samples is unreliable and has been flagged "R" on the sample data tables. Very low response factors were observed for 2-butanone in all multi-point initial and continuing calibrations in this data set.

- Very low surrogate recoveries ($<10\%$) were obtained for d_5-nitrobenzene in the semivolatile analysis of sample LO-1G106S-WO (oil layer), d_{14}-terphenyl in the semivolatile analysis of sample LO-1MW05S-GWRE, d_5-phenol and 2,4,6-tribromophenol in the semivolatile analysis of samples LO-1MW05S-GW, LO-1MW05S-GWRE, LO-1MW05S-FD and LO-1MW05S-FDRE and for all three acid surrogate compounds in the semivolatile analysis of samples LO-1MW06D-GW and LO-1MW06D-GWRE. Accordingly, the analysis for all base/neutral compounds in samples LO-1G106S-WO (oil layer) and LO-1MW05S-GWRE and all acid compounds in samples LO-1MW06D-GW, LO-1MW06D-GWRE, LO-1MW05S-GW, LO-1MW05S-GWRE, LO-1MW05S-FD and LO-1MW05S-FDRE are unreliable and have been flagged "R" on the sample data tables. Similarly, the positive results reported for base/neutral compounds in samples LO-1G106S-WO (oil layer) and LO-1MW05S-GWRE should be considered estimated and have been flagged "J" on the sample data tables.

- The CLP spiking compounds 2,4-dinitrotoluene, 4-nitrophenol and N-nitroso-di-n-propylamine were not detected in the matrix spike and/or matrix spike duplicate analysis of sample LO-G106S-WO (oil layer). Accordingly, the analysis for the aforementioned compounds in this sample is unreliable and have been flagged "R" on the sample data tables.

- The reported positive results for heptachlor epoxide, methoxychlor and endrin ketone in sample LO-1G106-WO (oil layer) is unreliable and have been flagged "R" on the data tables. Examination of the raw data revealed the presence of patterns clearly indicative of the presence of PCB Aroclors, Specifically, the reviewer obtained a very good match to PCB 1242 on both GC columns with a concentration of 1,130 μg/Kg as PCB 1242 which has been added to the data tables. Clearly, the PCB patterns resulted in false-positive results for the aforementioned pesticides. Furthermore, it appears that Aroclors 1254 and 1260 may also be present, but due to significant peak overlapping, the presence of Aroclors 1254 and 1260 cannot be determined with certainty. Therefore, the analysis for of Aroclor 1254 and Aroclor 1260 in sample LO-1G106S-WO (oil layer) are unreliable and have been flagged "R" (compound may or may not be present) on the sample data tables.

- The actual detection limits for all "not-detected" results for compounds quantitated using the internal standard(s) chrysene-d_{12} in sample LO-1MW02S-GW; perylene-d_{12} in sample LO-1MW02S-GWRE; d_8-naphthalene, d_{10}-acenaphthene and d_{10}-phenanthrene in sample LO-1G106S-WODL (oil layer); d_{10}-acenaphthene in sample LO-1G106S-WODLRE; d_{10}-acenaphthene and d_{10}-phenanthrene in sample LO-1MW05S-FDRE; all volatile compounds in sample LO-1MW03S-GWRE; bromochloromethane and 1,4-difluorobenzene in samples LO-1MW05S-FD; bromochloromethane in sample LO-1MW03S-FDRE; all compounds quantitated using d_8-naphthalene, d_{10}-acenaphthene, d_{10}-phenanthrene and d_{12}-chrysene in sample LO-1G106S-WO (oil layer); and all "not-detected" results for semivolatile compounds <u>except</u> those quantitated using d_4-1,4-dichlorobenzene in sample LO-1MW05S-GW and LO-1MW05S-FD; and d_4-1,4-dichlorobenzene and d_8-naphthalene in sample LO-1MW05S-FDDL may be higher than reported and have been flagged "UL" (unless previously flagged "R") on the sample data tables. Similarly, any positive result for compounds quantitated using the aforementioned internal standards in the associated samples should be considered estimated and have been flagged "J" on the sample data tables. The areas for these internal standards in the associated samples were not within CLP criteria.

- The actual detection limits for VOA compounds in sample LO-1MW02S-GW may be higher than reported and have been flagged "UL" on the data tables. Similarly, the positive result for total-1,2-dichloroethene in sample LO-1MW02S-GW should be considered estimated and has been flagged "J" on the data tables. According to the Chain-of-Custody, both VOA vials for this sample were observed to contain air bubbles when this sample was received by the laboratory.

- The positive results reported for methylene chloride in samples LO-1GW1-FBRE and LO-GW6-TBRE and acetone in sample LO-1G106S-WO (aqueous layer), and tetrachloroethane in samples LO-1G101D-GW, LO-1G102L-GW and LO-1MW03S-FD should be considered estimated and have been flagged "J" on the sample data tables. High percent differences (>25%) were observed between the response factors used to quantitate these results and the average response factors calculated from the associated initial multi-point calibrations.

- The positive results reported for acetone in sample LO-1G106S-WO and methylene chloride in samples LO-1GW1-FBRE and LO-GW6-TBRE should be considered estimated and have been flagged "J" on the sample data tables. A high relative standard deviation (>30%) was observed for the response factors of acetone and methylene chloride in the initial multi-point calibration associated with the aforementioned samples.

- The positive results reported for 2-methylnaphthalene, acenaphthene, dibenzofuran, fluorene and phenanthrene in sample LO-1G106S-WO (oil layer), 2-methylnaphthalene and phenanthrene in samples LO-1MW05S-FD, LO-1MW05S-GWRE, LO-1MW05D-FDRE and LO-1MW05S-GW and naphthalene in sample LO-1MW05S-FD should be considered estimated and have been flagged "J" on the sample data tables. These results exceeded the calibration range of the instrument.

- The actual detection limits for all base/neutral compounds in samples LO-1G101L-GW and LO-1G101L-GWRE may be higher than reported and have been flagged "UL" on the sample data tables. Low surrogate recoveries were obtained for d_5-nitrobenzene and 2-fluorobiphenyl in the semivolatile analysis of this sample.

- The positive results reported for tetrachloroethene in sample LO-1MW03S-FD, methylene chloride in samples LO-1GW1-FBRE and LO-1GW6-TB, toluene, acetone and total xylenes in sample LO-1GW1-FB, 1,2-dichloroethane, ethylbenzene and total xylenes in samples LO-1MW05S-FD and LO-MW05S-FDRE and all positive results in samples LO-1G106S-WODL (oil layer) and LO-1G106S-WODLRE (oil layer) should be considered estimated and have been flagged "J" on the sample data tables. High surrogate recoveries were observed in the volatile and/or semivolatile analyses of the aforementioned samples.

- A slightly high relative percent difference was observed for toluene between the matrix spike and matrix spike duplicate analysis of sample LO-1G106S-WO (aqueous layer). Accordingly, the positive result reported for toluene in this sample should be considered estimated and has been flagged "J" on the sample data tables.

- A high percent recovery was obtained for acenaphthene in the matrix spike (MS) and matrix spike duplicate (MSD) analysis of sample LO-G106S-WO (oil layer). In addition, a high relative percent difference was obtained for acenaphthene between the MS and MSD. Accordingly, the positive result reported for acenaphthene in this sample should be considered estimated and has been flagged "J" on the sample data tables.

- The volatile analysis of samples LO-1MW04S-GWRE and LO-1GW-TB3 were performed 20-21 days from the date of sample collection. Therefore, the actual detection limits of all volatile compounds in these samples may be higher than reported and have been flagged "UL" on the sample data tables. Similarly, all the positive results reported for samples LO-1GW-TB3 and LO-1MW04S-GWRE should be considered estimated and have been flagged "J" on the sample data tables.

- The actual detection limits for the volatile aromatic compounds in samples LO-1MW02S-GW, LO-1MW04S-GW, LO-1MW05S-GW, LO-1MW06S-GW, LO-1MW06D-GW, LO-G106DR-MS/MSD, LO-1G106DR-GW, LO-1MW03S-FDRE, LO-1MW04S-FD,LO-1MW05S-FD,LO-1MW05S-FDRE,LO-1GW3-FB,LO-GW6-TB, LO-GW6-TBRE, LO-1MW02S-MS/MSD, LO-1GW-TB1, LO-1GW-TB, LO-1GW-TB3 and LO-1G106S-WO (aqueous) may be higher than reported and have been flagged "UL" on the data tables. Similarly, positive results for volatile aromatic compounds LO-1MW05S-GW, LO-1MW05S-FD, LO-1MW05S-FD-RE, LO-1GW-TB3 and LO-1G106-WO (aqueous) should be considered estimated and have been flagged "UL" on the data tables. The volatile analyses of the aqueous aforementioned samples were analyzed in excess of the Federal Register maximum allowable holding time for the analysis for purgeable aromatics of 7 days from collection in unpreserved samples. In addition, it should be noted that the aforementioned samples were analyzed in excess of the Lenz Oil Site "RI/FS Sampling and Analysis Plan" of 7 days from collection (Page T-8). Non-aromatic volatiles that were analyzed within the Federal Register holding time of 14 days from sample collection did not require qualification.

- The relative retention time for the peak reported as 2-methylnaphthalene in sample LO-1G106-WO (oil layer) differed by 12 seconds from the relative retention time reported for 2-methylnaphthalene in the associated continuing calibration standard. However, a reasonably good qualitative match was observed between the sample and standard mass spectrum for 2-methylnaphthalene. Furthermore, it is possible that this reported result represents the total concentration of the 1-methylnaphthalene and 2-methylnaphthalene isomers. Therefore, the reported result for 2-methylnaphthalene in sample LO-1G106S-WO (oil layer) should be considered estimated and has been flagged "J" on the data tables.

- The laboratory reported results for Aroclor 1248 and Aroclor 1260 in samples LO-1MW05S-GW and LO-1MW05S-FD. However, the data reviewer observed an additional multi-peak pattern indicative of Aroclor 1242 in sample LO-1MW05S-GW. The quantitated result of 645 μg/Kg for Aroclor 1242 has been added to the sample data tables. Due to the significant peak overlapping it is somewhat judgmental whether Aroclor 1242 and/or Aroclor 1248 is truly present. Furthermore, the presence of Aroclor 1242 was not clearly evident in sample LO-1MW05S-FD, the field duplicate of sample LO-1MW05S-GW.

- Three blind field duplicate pairs were submitted to the laboratory for this data set as listed below.

Sample	Duplicate
LO-1MW03S-GW	LO-1MW03S-FD
LO-1MW04S-GW	LO-1MW04S-FD
LO-1MW05S-GW	LO-1MW05S-FD

- Positive results were not-detected above the quantitation limit for any volatile, semivolatile or pesticide/PCB target compounds for the field QC samples LO-1MW03S-GW and LO-1MW03S-FD and LO-1MW04S-GW and LO-1MW04S-FD with the exception of benzoic acid (27 μg/L) in the field duplicate of sample LO-1MW04S-GW. However, the following high percent differences (>35%) were observed for several target compounds in the volatile, semivolatile and pesticide/PCB fractions for the field QC samples LO-1MW05S-GW and LO-1MW05S-FD. Therefore, the positive results for the following compounds should be considered estimated and have been flagged "J" on the sample data tables. Similarly, the "not-detected" results for the following compounds may be higher than reported and have been flagged "UL" on the sample data tables.

Compound	Sample Result	Duplicate Result	Percent Difference
1,1-dichloroethane	28 μg/L	not detected	100%
chloroform	14 μg/L	not detected	100%
total xylene	670 μg/L	920 μg/L	37%
1,2-dichloroethane	not detected	28 μg/L	100%
dibenzofuran	410 μg/L	670 μg/L	63%

Compound	Sample Result	Duplicate Result	Percent Difference
phenanthrene	1800 µg/L	3600 µg/L	100%
anthracene	79 µg/L	150 µg/L	90%
fluoranthene	not detected	130 µg/L	100%
bis(2-ethylhexyl)phthalate	290 µg/L	530 µg/L	83%

- The following high percent differences (>35%) were observed between results reported above the quantitation limit for several target compounds in the original analysis and reanalysis and/or dilution analysis of several samples. Accordingly, the positive results reported for the following compounds should be considered estimated and have been flagged "J" on the sample data tables.

Sample	Compound	Result for Original Analysis	Result for Reanalysis/Dilution	Percent Difference
LO-1MW05S-GW	2-methylnaphthalene	3200 µg/L	1900 µg/L	41%
LO-1MW05S-GW	anthracene	79 µg/L	120 µg/L	52%
LO-1MW05S-GW	pyrene	110 µg/L	59 µg/L	46%

- Per CLP protocol, all results reported below the quantitation limit should be considered estimated and have been flagged "J" on the data tables.

- Tentatively Identified Compounds (TICs) have been evaluated and are presented on the data tables. Most of the TICs were reported at levels below the quantitation limit. The TICs include numerous benzene derivations and several alkanes and unknowns.

B. Inorganic Data

The inorganic analysis of 60 aqueous samples (including 6 field blanks) representing 30 total and dissolved samples and the analysis of one oil sample was performed by ARDL, Inc. Laboratory of Mount Vernon, Illinois. All samples were analyzed by CLP protocols for the Target Analyte List (TAL) inorganic constituents. The data set was submitted in four distinct sample delivery groups (SDGs) as specified by the six-digit prefix of the laboratory sample number.

The findings offered in this report are based upon a rigorous review of the sample holding times, blank analysis results, pre- and post-digestion spike recoveries, laboratory duplicate analyses, initial and continuing calibrations, ICP interference checks, instrument sensitivity, system performance, ICP serial dilutions, graphite furnace duplicate burns and the quantitation of positive results. The analytical results are provided in Section 2B.

Overall, the inorganic data quality was fair. Contractual criteria and reporting requirements were met for this data set, with the exception of the following deficiencies. It should be noted that the following issues are contractual in nature and may not necessarily affect data usability. Usability is addressed in a separate section of this report.

Correctable Deficiencies

1. According to the Chain-of-Custodies provided, the laboratory misidentified sample LO-1MW05S-FD as LO-1G105S-FD on the Form I.

2. The concentration level was not reported on any of the QC forms as required (SOW788, B-15).

3. None of the raw data were labelled with the ERM-NC sample numbers as required (SOW788, B-9).

4. Digestion logs for the flame atomic absorption and hydride generation analyses were not included in the data packages provided.

5. The values and percent recoveries for total cyanide were not reported on the Initial and Continuing Calibration Verification Forms (Form II's) as required (SOW788, E-5).

6. An inconsistent number of significant figures was used to report the "Initial Calibration Found" and "Continuing Calibration Found" on the Initial and Continuing Calibration Verification Forms (Form II's). According to CLP protocol, the value of the concentration of each analyte measured in the verification solutions should be reported to two decimal places (SOW788, B-20).

7. The percent recoveries were not reported on the ICP Interference Check Sample Forms (Form IV's) for aluminum, calcium, iron and magnesium as required (SOW788, B-24). In addition, the concentrations of all elements except for aluminum, calcium, iron and magnesium were not reported on the Form IV's for Solution A.

8. The prep blank concentration units were misreported on the Blank Form (Form III) for SDG 111928. The correct units should be mg/Kg.

9. The Analysis Run Log Forms (Form XIV's) are incorrect for the analytes checked when the calibration verifications, laboratory control samples and interference check samples were reanalyzed.

Noncorrectable Deficiencies

1. The laboratory analyzed samples called "blank" in between the analysis of the ICP initial calibration verifications and the initial calibration blanks for SDGs 111798, 111908 and 111918. Per CLP protocol, the initial calibration blank must be analyzed immediately after every initial calibration verification (SOW788, E-6).

2. The laboratory did not analyze many of the continuing calibration verifications and continuing calibration blanks at the required frequency of 10% or every 2 hours (whichever is more frequent) during the ICP analytical runs for SDGs 111897, 111908 and 111918 as required (SOW788, E-7).

3. In SDG 111908, the laboratory reported the values for the percent recoveries for iron (total) and magnesium (total) from the continuing calibration verifications performed on 5/23/91 at 11:36 and at 11:33 (respectively) based on only the first analytical run instead of from the average of the two analytical runs as required (SOW788, D-1). In addition, in SDG 111897, the laboratory reported the percent recovery for magnesium (dissolved) from the CCV performed on 5/8/91 at 10:57 based upon the first analytical run. Finally, in SDG 111918, the laboratory reported the percent recovery for aluminum (dissolved) from the CCV performed on 5/28/91 at 7:56 based upon the first analytical run. Although the actual noncompliance in the reporting requirement is a correctable deficiency, the implications of this are noncorrectable. Had the values of the averages of the two analytical runs been reported, percent recoveries would have been obtained outside the control limits for these elements. In accordance with CLP protocol, if the recovery of any element falls outside the specified control limits, the analysis must be terminated, the instrument must be recalibrated, the calibration must be verified and the preceding 10 samples must be reanalyzed (SOW788, E-6).

4. The concentrations of all of the CRI standards for antimony were 1.25 times the concentration specified in CLP protocol. In addition, the concentrations of the CRA standards for lead, arsenic, selenium, sodium and thallium were higher than the specified concentrations (SOW788, E-6).

5. The final ICP interference check sample (ICS) solution ICSAB was analyzed twice at the conclusion of the analytical run performed on 5/15/91 (associated with the dissolved samples in SDG 111908) and analyzed twice at the beginning of the analytical run performed on 5/8/91 (associated with the dissolved samples in SDG 111897). In the first of the two analyses on 5/15/91 of the final ICSAB solution, a 147% recovery for

beryllium and a 181% recovery for manganese was obtained. In the first of the two analyses on 5/8/91 of the initial ICSAB solution, 176.8% recovery for manganese was obtained. The laboratory immediately reanalyzed the ICSAB solutions and obtained recoveries for beryllium and manganese that were within the 80-120% control limits. Per CLP protocol, if the results for the ICP analyses of the ICSAB solution outside the 80-120% control limits, then the analysis must be terminated, the instrument must be recalibrated and all analytical samples analyzed since the last good ICS analysis must be reanalyzed (SOW788, E-8).

6. Arsenic and selenium were analyzed by hydride generation for all samples. This method of analysis is not listed as an accepted method in the CLP protocol.

7. The spiking concentrations of the elements analyzed by the ICP method for the matrix spike analysis of sample LO-1MW04D-GW (total) in SDG 111908 were two times the levels specified in CLP protocol (SOW788, E-11).

8. The laboratory did not perform any post-digestion spikes on the elements that did not meet the specified control limit criteria for the pre-digestion spikes as required (SOW788, E-10).

9. The concentration of magnesium reported on the Laboratory Control Sample Form (Form VII) for the LCS performed on 5/15/91 at 8:30 (associated with dissolved samples in SDG 111908) on 5/7/91 at 7:45 and on 5/8/91 at 11:21 (associated with all samples in SDG 111918) was only based upon one run instead of upon the average of the two analytical runs as required (SOW788, D-1). Although the actual noncompliance in the reporting requirement is a correctable deficiency, the implications of this are noncorrectable. Had the concentration of the average of the two runs been reported, the percent recoveries for magnesium would have been just slightly outside the specified 80-120% control limits. Per CLP protocol, the analysis should have been terminated and the associated sample should have been redigested and reanalyzed (SOW788, E-13).

10. The analysis reported for cyanide for the samples in SDGs 111908 and 111897 was performed 2 days beyond the 14 day holding time from date of sample receipt. According to the case narratives, these samples were originally analyzed within holding time using the TRAACS 800 Auto Analyzer. However, the laboratory reanalyzed the samples using the manual method and reported the latter results, with no further explanation. In addition, the raw data for the automated method was not included in the data packages provided.

11. For SDGs 111897, 111908 and 111918, the laboratory analyzed many of the ICP calibration verification standards (initial and continuing) two or three times until elements that were outside the specified control limits were brought within the control limits. Per CLP protocol, if the recovery of a calibration verification standard falls outside the

specified 90-110% control limits for ICP analyses, the analysis must be stopped, the instrument recalibrates, the calibration verified and the preceding 10 analytical samples reanalyzed (SOW788, E-6).

12. The sample volume for the analysis of mercury and total cyanide in many project samples were not the volumes specified for these analyses in CLP protocol (SOW788, D-47 and D-66).

13. The spiking concentrations of the elements analyzed by ICP and flame methods for the matrix spike analysis of sample LO-1G106S-WO were one half the levels specified in CLP protocol (SOW788, E-11).

14. The positive results for calcium in samples LO-1G101M-GW (total), LO-1MW01S-GW (total), LO-1MW07S-GW (total), LO-1MW05S-GW (total), LO-1G105S-FD (total), LO-1MW05D-GW (total), LO-1MW04S-GW (total), LO-1MW04S-FD (total), LO-1MW02S-GW (total) and LO-1MW04S-GW (total), for magnesium in samples LO-1MW01S-GW (total), LO-1MW05S-GW (total), LO-1G105S-FD (total), LO-1MW04S-FD (total), LO-1MW02S-GW (total), LO-1MW04S-GW (total) and LO-1MW07D-GW (dissolved) and for iron in sample LO-1MW02S-GW (total) exceeded the calibration of the instrument. Per CLP protocol, all measurements must be within the instrument linear range (SOW788, D-14).

Comment

- It is interesting to note that none of the initial calibration blanks, continuing calibration blanks and laboratory preparation blanks for any of the SDGs revealed even the slightest trace-level blank contamination. This is extremely unusual.

With regard to data usability, principal areas of concern include blank contamination, holding times, the two-times CRDL standard recoveries, pre- and post-digestion spike recoveries, laboratory duplicate analyses, laboratory control sample results, calibrations, field duplicate precision, method of standard addition results and serial dilution results. Based upon a review of the data provided, the following inorganic data qualifiers are offered. It should be noted that the following inorganic data usability issues represent an interpretation of the quality control results obtained for the project samples. Quite often, data qualifications address issues relating to sample matrix problems. Similarly, the validation guidelines routinely specify areas of the data that require qualification, yet the methods used for analysis do not require any corrective action by the laboratory. Accordingly, the following data usability issues should not be construed as an indication of laboratory performance.

Inorganic Data Qualifiers

- Due to the trace-level presence of the following elements in the field blanks, the reported results for these elements in the samples listed below should be considered "not-detected" and have been flagged "U" on the data tables.

Element	Applicable Samples
aluminum	LO-1MW06D-GW (total)
iron	LO-1MW06D-GW (total)
lead	LO-1MW06D-GW (total)
manganese	LO-1MW06D-GW (total)
zinc	LO-1MW04D-GW (total), LO-1G104D-GW (total), LO-1MW07D-GW (total), LO-1MW07S-GW (total), LO-1MW02D-GW (total), LO-1G104L-GW (total), LO-1MW05D-GW (total), LO-1G106DR-GW (total), LO-1MW06D-GW (total), and LO-MW06S-GW (total)

- The analyses for the elements in the following samples are unreliable and have been flagged "R" on the data tables. Very low or zero percent recoveries were obtained for the two-times CRDL standard associated with these samples.

Element	Applicable Samples
aluminum	All samples in SDG 111908 (dissolved), LO-1GW2-2FB (total), LO-1G102L-GE (total), LO-1GW1-FB (total), and all samples in SDG 111918 (dissolved) except sample LO-1MW04S-GW (dissolved)
cadmium	All samples in SDG 111908 (dissolved) except sample LO-1MW04D-GW (dissolved). All samples in SDG 111897 (dissolved) and all samples in SDG 111918 with "not-detected" results
manganese	LO-1GW2-FB (total), LO-1MW06S-GW (dissolved) and LO-1MW06D-GW (dissolved)

Element	Applicable Samples
silver	All sample in SDG 111908 (total), all samples in SDG 111897 (total) and all samples in SDG 111918 with "not-detected" results
antimony	All samples in SDG 111918 except sample LO-1MW02S-GW (total)

- The analysis for barium in all samples in SDG 111918 (dissolved) except samples LO-1MW04S-GW (dissolved) and LO-1MW04S-FD (dissolved) are unreliable and have been flagged "R" on the data tables. A very low recovery was obtained (29%) for the matrix spike associated with these samples.

- The positive results for the elements in the following samples should be considered estimated and have been flagged "J" on the data tables. High percent differences were obtained between the results for these elements in the field duplicate pairs.

Element	Applicable Samples
arsenic	LO-1MW05S-GW (total) and LO-1MW05S-FD (total)
beryllium	LO-1MW05S-GW (total) and LO-1MW05S-FD (total)
copper	LO-1MW05S-GW (total) and LO-1MW05S-FD (total)
aluminum	LO-1MW04S-GW (dissolved)
lead	LO-1MW03S-GW (dissolved), LO-1MW04S-GW (total) and LO-1MW04S-FD (total)
potassium	LO-1MW04S-GW (total) and LO-1MW04S-FD (total)
total cyanide	LO-1MW04S-GW (total) and LO-1MW04S-FD (total)
iron	LO-1MW04S-GW (dissolved) and LO-1MW04S-FD (dissolved)
zinc	LO-1MW04S-FD (dissolved)

- The positive result for total cyanide in sample LO-1G106DR-GW should be considered estimated and has been flagged "J" on the data tables. Similarly, the actual detection limits for all "not-detected" results in SDGs 111897 and 111908 may be higher than reported and have been flagged "UL" on the data tables. The reanalysis of cyanide for samples in these SDGs was performed 17 days from sample collection. The Federal Register holding time for the cyanide analysis is 14 days from sample collection to analysis.

- The positive results for the elements in the following samples should be considered estimated and have been flagged "J" on the data tables. High relative percent differences were obtained for these elements between the total and dissolved sample results, with the dissolved sample analyses displaying the higher analytical result.

Element	Applicable Samples
sodium	LO-1MW05S-GW (total and dissolved), LO-1MW05S-FD (total and dissolved) and LO-1G101L-GW (total and dissolved)
manganese	LO-1G104L-GW (total and dissolved)
aluminum	LO-1G101L-GW (total and dissolved) and LO-1MW01D-GW (total and dissolved)
potassium	LO-1MW04S-GW (total and dissolved)

- The actual detection limits for thallium in samples LO-1MW04D-GW (total and dissolved), LO-1G104D-GW (dissolved), LO-1GW2-FB (total), LO-1MW07S-GW (total), LO-1MW02D-GW (dissolved), LO-1MW05S-GW (dissolved), LO-1G104L-GW (dissolved), LO-1G106DR-GW (dissolved), LO-1G102D-GW (total and dissolved), LO-1G102L-GW (total and dissolved), LO-1G101D-GW (total and dissolved), LO-1G101M-GW (total and dissolved), LO-1G101L-GW (total), LO-1MW01D-GW (total and dissolved), LO-1MW01S-GW (dissolved), LO-1MW03S-GW (total and dissolved), LO-1MW03D-GW (total and dissolved), LO-1MW03S-FD (total), LO-1MW06D-GW (total and dissolved), LO-1MW04S-FD (total), LO-1MW02S-GW (dissolved), LO-1GW3-FB (total and dissolved), LO-1MW06S-GW (total and dissolved), LO-1MW04S-GW (total and dissolved), LO-1G106S-WO and for lead in samples LO-1GW2-FB (total), LO-1G106DR-GW (dissolved), LO-1G101L-GW (dissolved), LO-1GW1-FB (total) and LO-1GW3-FB (dissolved) may be higher then reported and have been flagged "UL" on the data tables. Low post-digestion spike recoveries were obtained for thallium and lead in the aforementioned samples.

- The positive results for lead in samples LO-1MW01S-GW (total) and LO-1MW04S-GW (dissolved) should be considered estimated and have been flagged "J" on the data tables. Low correlation coefficients (<0.995) were obtained for lead in the method of standard addition analysis of these samples.

- The positive results for the elements in the following samples should be considered estimated and have been flagged "J" on the data tables. Similarly, the actual detection limits for the elements in the following samples may be higher then reported and have been flagged "UL" on the data tables. Whenever possible, the reasons for the qualifications have been footnoted and when possible, an indication of bias (percent recovery, percent difference, etc.) has been presented. For ease of data usability, this information has been presented in four tables to correspond to the four sample delivery groups.

TABLE 2

SAMPLES IN SAMPLE DELIVERY GROUP 111897

Element	Samples With Biased Detection Limits	Samples With Estimated Positive Results	%REC, PD(%) or RPD (%)
aluminum[a,b,c,d,g]		LO-1G101L-GW (dissolved), LO-1MW01D-GW (dissolved) and all samples in SDG (total) except samples LO-1GW1-FB (total) and LO-1G102L-GW (total)	0%; 275%; 70%; 22% (PD)
antimony[a]	All samples in SDG		38% and 89%, 31% and 39%
beryllium[a]	All samples in SDG except LO-1G101M-GW (total) and LO-1MW01S-GW (total)	LO-1G101M-GW (total) and LO-1MW01S-GW (total)	60% and 80%, 70% and 80%
calcium[a]		All samples in SDG (dissolved) except sample LO-1GW1-FB (dissolved)	*
cadmium[b]		LO-1G102D-GW (total)	120%
chromium[a]	All samples in SDG with "not-detected" results	LO-1MW03S-GW (total) and LO-1MW03S-FD (total)	85%
cobalt[a]	All samples in SDG (dissolved)		83%
iron[a,c,e]		LO-1G101L-GW (dissolved) and all samples in SDG (total) except sample LO-1GW1-FB (total)	80%; 65%; 10.5% (PD)
lead[b,d]		LO-1MW03D-GW (dissolved) and all samples in SDG (total) except samples LO-1GW1-FB (total)	112%, 120%; 146%
manganese[a,b]	All samples in SDG with "not-detected" results	LO-1G102D-GW (dissolved) and LO-1G101L-GW (total)	47%, 43% and 57%; 78.4% and 79.7%
nickel[a]	All samples in SDG with "not-detected" results	LO-1G102D-GW (total and dissolved), LO-1G101M-GW (total), LO-1MW03S-GW (total) and LO-1MW3S-FD (total)	72% and 88%, 81%
potassium[a]	LO-1GW1-FB (total and dissolved)	All samples in SDG with positive results	85%
thallium[c]	All samples in SDG (total)		74%
vanadium[a]	All samples in SDG (total) except sample LO-1MW01S-GW (total)	LO-1MW01S-GW (total)	88%
zinc[a]	All samples in SDG with "not-detected" results	LO-1G101L-GW (total)	82%, 83%

* See noncorrectable deficiency 11.

TABLE 3

SAMPLES IN SAMPLE DELIVERY GROUP 111908

Element	Samples With Biased Detection Limits	Samples With Estimated Positive Results	%REC, PD (%) or RPD (%)
aluminum[c]		All samples in SDG (total) except sample LO-1GW2-FB (total)	68%
antimony[a]	All samples in SDG (dissolved)		65% and 72%
arsenic[d]		LO-1G104D-GW (total), LO-1MW05S-GW (total), LO-1MW05S-FD (total) and LO-1MW05D-GW (total)	140%
barium[a]	LO-1MW04D-GW (dissolved), LO-1G104D-GW (dissolved), LO-1GW2-FB (dissolved), LO-1MW07D-GW (dissolved), LO-1MW02D-GW (dissolved) and LO-1MW05D-GW (dissolved)	LO-1MW07S-GW (dissolved), LO-1MW05S-GW (dissolved), LO-1MW05S-FD (dissolved), LO-1G104L-GW (dissolved) and LO-1G106DR-GW (dissolved)	86%
beryllium[a]	All samples in SDG (dissolved)		80%
cadmium[a]		LO-1MW04D-GW (total and dissolved), LO-1MW05S-FD (total) and LO-1G104L-GW (total)	0%, 80%
calcium[a]		All samples in SDG with positive results	*
cobalt[a]	All samples in SDG (dissolved), LO-1MW04D-GW (total), LO-1GW2-FB (total), LO-1MW07D-GW (total), LO-1MW02D-GW (total), LO-1G104L-GW (total) and LO-1G106DR-GW (total)	LO-1G104D-GW (total), LO-1MW07S-GW (total), LO-1MW05S-GW (total), LO-1MW05S-FD (total) and LO-1MW05D-GW (total)	85%, 87%
copper[a,c]	All samples in SDG (total and dissolved) except samples LO-1MW05S-GW (total) and LO-1MW05S-FD (total)	LO-1MW05S-GW (total) and LO-1MW05S-FD (total)	82%; 60%
iron[e,f]		All samples in SDG (total)	14% (PD)
magnesium[a,g,h]	LO-1GW2-FB (dissolved)	All samples in SDG except sample LO-1GW2-FB (dissolved)	82%; 117%; 79.7%
manganese[a]	LO-1MW04D-GW (dissolved), LO-1G104D-GW (dissolved), LO-1GW2-FB (dissolved), LO-1MW07D-GW (dissolved), LO-1MW07S-GW (dissolved), LO-1MW02D-GW (dissolved), LO-1MW05D-GW (Dissolved) and LO-1G106DR-GW (dissolved)	LO-1MW04D-GW (total)	40% and 50%; 0%
mercury[a]	All samples in SDG (dissolved)		80%
nickel[a]	All samples in SDG (dissolved)		66%
potassium[a]	LO-1GW2-FB (total and dissolved)	All samples in SDG except samples LO-1GW2-FB (total and dissolved) and LO-1G104L-GW (total and dissolved)	82%
silver[a,c]	All samples in SDG (dissolved)		60%; 62%
thallium[a,c]	All samples in SDG		80%;74%
zinc[a,b]		LO-1MW07S-GW (dissolved), LO-1GW2-FB (total) and LO-1G104L-GW (dissolved)	88%; 11.50%

* See noncorrectable deficiency 11.

TABLE 4

SAMPLES IN SAMPLE DELIVERY GROUP 111918

Element	Samples With Biased Detection Limits	Samples With Estimated Positive Results	%REC, PD (%) or RPD (%)
aluminum[a,c,d,i]		All reported positive results in SDG except for sample LO-1MW06D-GW (total)	0% and 65%; 370%, 45%, 76% (PD)
antimony[a,d]		LO-1MW02S-GW (total)	0% and 7%; 150% and 190%
arsenic[d]		All positive results in SDG (total)	140%
beryllium[a]	All samples in SDG with "not-detected" results	LO-1MW04S-GW (total) and LO-1MW04S-FD (total)	80%
barium[c]		LO-1MW04S-GW (dissolved) and LO-1MW04S-FD (dissolved)	29%
cadmium[a]		LO-1MW02S-GW (total), LO-1MW04S-GW (total) and LO-1MW04S-FD (total and dissolved)	0% and 50%
calcium[g]		All samples in SDG with positive results	*
chromium[b]		LO-1MW06D-GW (total)	110% and 115%
cobalt[a]	All samples in SDG with "not-detected" results	LO-1MW06S-GW (total)	87% and 88%
copper[a,c]	All samples in SDG with "not-detected" results		88%; 60%
iron[d]		All samples in SDG (dissolved) with positive results	650%
lead[b,c]	LO-1MW02S-GW (dissolved), LO-1MW06S-GW (dissolved), LO-1MW06D-GW (dissolved) and LO-1GW3-FB (dissolved)	LO-1MW04S-GW (dissolved) and LO-1MW04S-FD (dissolved)	112%; 70%
magnesium[a]		All samples in SDG (total)	36% (PD)
mercury[b]		LO-1MW04S-FD (total)	120%
nickel[a]	All samples in SDG with "not-detected" results	LO-1MW06S-GW (total)	81%
potassium[a]	LO-1GW3-FB (total and dissolved)		82%
selenium[b,c]	All samples in SDG except sample LO-1MW02S-GW (total)	LO-1MW02S-GW (total)	120%; 64% and 73%
silver[a,c]		LO-1MW02S-GW (total) and LO-1MW04S-GW (total)	0% and 55%; 62% and 66%
thallium[a]	All samples in SDG (total) except sample LO-1MW02S-GW (total)	LO-1MW02S-GW (total)	80%
zinc[b]		LO-1GW3-FB (total)	112%
total cyanide[e]	LO-1MW02S-GW (total), LO-1MW06S-GW (total), LO-1MW06D-GW (total) and LO-1GW3-FB (total)	LO-1MW04S-GW (total) and LO-1MW04S-FD (total)	39%

* See noncorrectable deficiency 11.

TABLE 5

OIL SAMPLE IN SDG 111928

Element	Samples With Biased Detection Limits	Samples With Estimated Positive Results	%REC, PD (%) or RPD (%)
antimony[a]	LO-1G106S-WO		61%
copper[a]	LO-1G106S-WO		50%
iron[b]		LO-1G106S-WO	135%
lead[c]		LO-1G106S-WO	56%
magnesium[a]	LO-1G106S-WO		89%
mercury[a]	LO-1G106S-WO		71%
selenium[c]	LO-1G106S-WO		52%
silver[c]	LO-1G106S-WO		68%
zinc[b]		LO-1G106S-WO	125% and 130%

NOTES:

[a] A low recovery was obtained for this element in the two-times CRDL standard associated with these samples.

[b] A high recovery was obtained for this element in the two-times CRDL standard associated with these samples.

[c] A low recovery was obtained for this element in the matrix spike associated with these samples.

[d] A high recovery was obtained for this element in the matrix spike associated with these samples.

[e] A high percent difference was obtained between the results for this element in the serial dilution associated with these samples.

[f] A low recovery was obtained for this element in an associated continuing calibration verification.

[g] High recoveries were obtained for this element in associated continuing calibration verification standards.

[h] A low recovery was obtained for this element in an associated laboratory control sample.

[i] A high percent difference was obtained for this element between the sample and the associated laboratory duplicate sample.

B. INORGANIC DATA

INORGANIC ANALYSIS - ANALYTICAL RESULTS

ERN North Central Sample Number			LO-16102D-GW	LO-16102D-GW	LO-16102L-GW	LO-16102L-GW	LO-16101D-GW	LO-16101D-GW	LO-16101R-GW	LO-16101R-GW
Laboratory Sample Number			111897-1	111897-1	111897-2	111897-2	111897-3	111897-3	111897-4	111897-4
Remarks			Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Units			ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
INORGANIC ELEMENTS		Detection Limit								
Aluminum	P	200	1500 J		R		220 J		19000 J	
Antimony	P	60	UL	UL	UL	UL	UL	UL	UL	UL
Arsenic	H	0.9	8.2	5.6	63	5.1			58	
Barium	P	50	56		93	67			130	
Beryllium	P	5.0	UL	UL	UL	UL	UL	UL	0.3 J	UL
Cadmium	P	5.0	7 J	R		R		R		R
Calcium	P	1000	170000	110000 J	150000	110000 J	120000	120000 J	730000 J	87000 J
Chromium	P	10	230	UL	UL	UL	UL	UL	42	UL
Cobalt	P	50		UL		UL		UL	110	UL
Copper	P	25							39	
Iron	P	50	8400 J	1600	46000 J	1200	1200 J	820	94000 J	
Lead	F	2.0	6.9 J		6 J		5.4 J		54 J	
Magnesium	P	1000	84000	55000	71000	56000	59000	61000	420000	44000
Manganese	P	15	240	37 J	300	61	UL	UL	2300	UL
Mercury	CV	0.20								
Nickel	P	40	110 J	46 J	UL	UL	UL	UL	77 J	UL
Potassium	A	500	6300 J	5900 J	5600 J	5600 J	2600 J	2600 J	9000 J	1600 J
Selenium	H	0.9								
Silver	P	10	R		R		R		R	
Sodium	A	500	150000	140000	140000	140000	8400	7900	4600	3800
Thallium	F	5.0	UL	UL	UL	UL	UL	UL	UL	UL
Vanadium	P	50	UL		UL		UL		UL	
Zinc	P	20	UL	UL	UL	UL	UL	UL	270	UL
Cyanide	C	10	UL	NA	UL	NA	UL	NA	UL	NA

NOTES:

- \- Element was not detected.
- U This analyte should be considered "not detected" since it was detected in a blank at a similar level.
- R Unreliable result - Analyte may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
- UL This analyte was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.
- NA Not analyzed.

ANALYTICAL METHOD:

- P - Inductively Coupled Plasma
- F - Graphite Furnace Atomic Absorption
- CV - Cold Vapor Atomic Absorption
- C - Manual Spectrophotometric
- A - Flame Atomic Absorption
- H - Hydride Generation

INORGANIC ANALYSIS - ANALYTICAL RESULTS

ERN North Central Sample Number			LO-16101L-GW	LO-16101L-GW	LO-1MW01D-GW	LO-1MW01D-GW	LO-1MW01S-GW	LO-1MW01S-GW	LO-1MW03S-GW	LO-1MW03S-GW
Laboratory Sample Number			111897-5	111897-5	111897-6	111897-6	111897-7	111897-7	111897-8	111897-8
Remarks			Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Units			ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
INORGANIC ELEMENTS		Detection Limit								
Aluminum	P	200	710 J	970 J	420 J	1000 J	51000 J		12000 J	
Antimony	P	60	UL	UL	UL	UL	UL	UL	UL	UL
Arsenic	H	0.9					74	8.3	56	
Barium	P	50					350	79	91	
Beryllium	P	5.0	UL	UL	UL	UL	13 J	UL	UL	UL
Cadmium	P	5.0		R		R		R		R
Calcium	P	1000	130000	110000 J	200000	160000 J	1300000	130000 J	380000	93000 J
Chromium	P	10	UL	UL	UL	UL	67	UL	22 J	UL
Cobalt	P	50		UL		UL	180	UL	66	UL
Copper	P	25					120			
Iron	P	50	4000 J	270 J	4300 J	1400	160000 J	2600	43000 J	
Lead	F	2.0	14 J	UL	3.8 J		59 J		54 J	5.5 J
Magnesium	P	1000	68000	54000	100000	87000	710000 J	61000	210000	46000
Manganese	P	15	36 J	UL	UL	UL	3700	80	930	UL
Mercury	CV	0.20								
Nickel	P	40	UL	UL	UL	UL	130	UL	52 J	UL
Potassium	A	500	2400 J	3600 J	4100 J	3600 J	17000 J	5600 J	6900 J	2300 J
Selenium	H	0.9								
Silver	P	10	R		R		R		R	
Sodium	A	500	6600 J	1300000 J	24000	22000	220000	210000	28000	27000
Thallium	F	5.0	UL		UL	UL	UL	UL	UL	UL
Vanadium	P	50	UL		UL		77 J		UL	
Zinc	P	20	33 J	UL	UL	UL	320	UL	110	UL
Cyanide	C	10	UL	NA	UL	NA	UL	NA	UL	NA

NOTES:

- Element was not detected.
U This analyte should be considered "not detected" since it was detected in a blank at a similar level.
R Unreliable result - Analyte may or may not be present in this sample.
J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
UL This analyte was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.
NA *Not analyzed.*

ANALYTICAL METHOD:

P - Inductively Coupled Plasma
F - Graphite Furnace Atomic Absorption
CV - Cold Vapor Atomic Absorption
C - Manual Spectrophotometric
A - Flame Atomic Absorption
H - Hydride Generation

INORGANIC ANALYSIS - ANALYTICAL RESULTS -page 3

ERM North Central Sample Number			LO-1MW03D-GW	LO-1MW03D-GW	LO-1MW03S-FD	LO-1MW03S-FD	LO-1GW1-FB	LO-1GW1-FB
Laboratory Sample Number			111897-9	111897-9	111897-10	111897-10	111897-11	111897-11
Remarks			Total	Dissolved	Total	Dissolved	Total	Dissolved
Units			ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
INORGANIC ELEMENTS		*Detection Limit*			*Duplicate of LO-1MW03S-GW*	*Duplicate of LO-1MW03S-GW*	*Field Blank*	*Field Blank*
Aluminum	P	200	1300 J		13000 J		R	
Antimony	P	60	UL	UL	UL	UL	UL	UL
Arsenic	H	0.9			54			
Barium	P	50			88			
Beryllium	P	5.0	UL	UL	UL	UL	UL	UL
Cadmium	P	5.0		R		R		R
Calcium	P	1000	230000	180000 J	400000	91000 J		
Chromium	P	10	UL	UL	21 J	UL	UL	UL
Cobalt	P	50		UL	67	UL		UL
Copper	P	25						
Iron	P	50	5400 J	1800	44000 J			
Lead	F	2.0	6.7 J	2.3 J	50 J		UL	
Magnesium	P	1000	120000	98000	220000	46000		
Manganese	P	15	UL	UL	970	UL	UL	UL
Mercury	CV	0.20						
Nickel	P	40	UL	UL	59 J	UL	UL	UL
Potassium	A	500	5400 J	4690 J	7800 J	2300 J	UL	UL
Selenium	H	0.9						
Silver	P	10	R		R		R	
Sodium	A	500	39000	39000	29000	27000		
Thallium	F	5.0	UL	UL	UL		UL	
Vanadium	P	50	UL		UL		UL	
Zinc	P	20	UL	UL	110	UL	UL	
Cyanide	C	10	UL	NA	UL	NA	UL	NA

NOTES:

- Element was not detected.

U This analyte should be considered "not detected" since it was detected in a blank at a similar level.

R Unreliable result - Analyte may or may not be present in this sample.

J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).

UL This analyte was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.

NA Not analyzed.

ANALYTICAL METHOD:

P - Inductively Coupled Plasma
F - Graphite Furnace Atomic Absorption
CV - Cold Vapor Atomic Absorption
C - Manual Spectrophotometric
A - Flame Atomic Absorption
H - Hydride Generation

INORGANIC ANALYSIS - ANALYTICAL RESULTS						-page 4
ERM North Central Sample Number			LO-1MW02S-GW	LO-1MW02S-GW	LO-1MW02D-GW	LO-1MW02D-GW
Laboratory Sample Number			111918-3	111918-3	111908-6	111908-6
Remarks			Total	Dissolved	Total	Dissolved
Units			ug/L	ug/L	ug/L	ug/L
INORGANIC ELEMENTS		Detection Limit				
Aluminum	P	200	170000 J	R	1100 J	R
Antimony	P	60	60 J	R		UL
Arsenic	M	0.9	320 J			
Barium	P	50	520	R	53	UL
Beryllium	P	5.0	33	UL		UL
Cadmium	P	5.0	9 J	R		R
Calcium	P	1000	3650000 J	180000 J	240000 J	160000 J
Chromium	P	10	240			
Cobalt	P	50	560	UL	UL	UL
Copper	P	25	430	UL	UL	UL
Iron	P	50	540000 J	99 J	7200 J	1900
Lead	F	2.0	430	UL	2.2	
Magnesium	P	1000	3050000 J	94000	130000 J	84000 J
Manganese	P	15	11000	440	120	UL
Mercury	CV	0.20				UL
Nickel	P	40	400	UL		UL
Potassium	A	500	49000	6500	6000 J	5500 J
Selenium	M	0.9	5.6 J	UL		
Silver	P	10	10 J	R	R	UL
Sodium	A	500	230000	220000	62000	64000
Thallium	F	5.0	15.1 J	UL	UL	UL
Vanadium	P	50	340			
Zinc	P	20	1300		41 U	
Cyanide	C	10	UL	NA	UL	NA

NOTES:

- Element was not detected.
- U This analyte should be considered "not detected" since it was detected in a blank at a similar level.
- R Unreliable result - Analyte may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
- UL This analyte was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.
- NA Not analyzed.

ANALYTICAL ANALYTICAL METHOD:

- P - Inductively Coupled Plasma
- F - Graphite Furnace Atomic Absorption
- CV - Cold Vapor Atomic Absorption
- C - Manual Spectrophotometric
- A - Flame Atomic Absorption
- H - Hydride Generation

INORGANIC ANALYSIS - ANALYTICAL RESULTS

ERM North Central Sample Number			LO-1MW04S-GW	LO-1MW04S-GW	LO-1MW04D-GW	LO-1MW04D-GW	LO-1MW05S-GW	LO-1MW05S-GW	LO-1MW05D-GW	LO-1MW05D-GW
Laboratory Sample Number			111918-6	111918-6	111908-1	111908-1	111908-7	111908-7	111908-10	111908-10
Remarks			Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Units			ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
INORGANIC ELEMENTS		Detection Limit								
Aluminum	P	200	77000 J	450 J	1200 J	R	31000 J	R	5700 J	R
Antimony	P	60	R	R		UL		UL		UL
Arsenic	H	0.9	120 J	31			13 J	22	9.6 J	
Barium	P	50	440	84 J		UL	560	62 J	90	UL
Beryllium	P	5.0	15 J	UL		UL	11 J	UL		UL
Cadmium	P	5.0	8 J	R	6 J	7 J		R		R
Calcium	P	1000	1090000 J	190000 J	230000 J	170000 J	1600000 J	120000 J	570000 J	150000 J
Chromium	P	10	110				53		13	
Cobalt	P	50	160	UL	UL	UL	210 J	UL	60 J	UL
Copper	P	25	90	UL	UL	UL	68 J	UL	UL	UL
Iron	P	50	160000	110 J	5200 J	1900	150000 J	1500	35000 J	1200
Lead	F	2.0	300 J	5.0 J	4.7	4.1	360	3.7	11	
Magnesium	P	1000	720000 J	210000	130000 J	87000 J	850000 J	58000 J	340000 J	78000 J
Manganese	P	15	3400	150	45 J	UL	4500	220	980	UL
Mercury	CV	0.20				UL	0.30	UL		UL
Nickel	P	40	130	UL		UL	140	UL		UL
Potassium	A	500	3100 J	70000 J	5900 J	5800 J	12000 J	4200 J	9200 J	7000 J
Selenium	H	0.9	UL	UL			4.6			
Silver	P	10	22 J	R	R	UL	R	UL	R	UL
Sodium	A	500	870000	850000	100000	110000	140000 J	190000 J	140000	150000
Thallium	F	5.0	UL	UL	UL	UL	UL	UL	UL	UL
Vanadium	P	50	130							
Zinc	P	20	610		54 U		230		57 U	
Cyanide	C	10	96 J	NA	UL	NA	UL	NA	UL	NA

NOTES:

- Element was not detected.
U This analyte should be considered "not detected" since it was detected in a blank at a similar level.
R Unreliable result - Analyte may or may not be present in this sample.
J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
UL This analyte was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.
NA Not analyzed.

ANALYTICAL METHOD:

P - Inductively Coupled Plasma
F - Graphite Furnace Atomic Absorption
CV - Cold Vapor Atomic Absorption
C - Manual Spectrophotometric
A - Flame Atomic Absorption
H - Hydride Generation

INORGANIC ANALYSIS - ANALYTICAL RESULTS											
ERM North Central Sample Number			LQ-1MW06S-GW	LQ-1MW06S-GW	LQ-1MW06D-GW	LQ-1MW06D-GW	LQ-1MW07S-GW	LQ-1MW07S-GW	LQ-1MW07D-GW	LQ-1MW07D-GW
Laboratory Sample Number			111918-5	111918-5	111918-1	111918-1	111908-5	111908-5	111908-4	111908-4
Remarks			Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Units			ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
INORGANIC ELEMENTS		Detection Limit								
Aluminum	P	200	62000 J	R	6000 U	R	3700 J	R	2600 J	R
Antimony	P	60	R	R	R	R		UL		UL
Arsenic	H	0.9	27 J							
Barium	P	50	250	R	67	R	110	81 J		UL
Beryllium	P	5.0	UL	UL	UL	UL		UL		UL
Cadmium	P	5.0	R	R	R	R		R		R
Calcium	P	1000	340000 J	73000 J	220000 J	180000 J	570000 J	220000 J	260000 J	170000 J
Chromium	P	10	81		12 J		12		12	
Cobalt	P	50	54 J	UL	UL	UL	56 J	UL	UL	UL
Copper	P	25	83	UL	UL	UL	UL	UL	UL	UL
Iron	P	50	68000	67 J	7400 U	2400 J	26000 J	9900	9100 J	1100
Lead	F	2.0	50	UL	2.2 U	UL	15	2.5	7.3	5.4
Magnesium	P	1000	180000 J	28000	120000 J	88000	320000 J	120000 J	140000 J	930000 J
Manganese	P	15	1100	R	80 U	R	630	UL	170	UL
Mercury	CV	0.20						UL		UL
Nickel	P	40	57 J	UL	UL	UL		UL		UL
Potassium	A	500	26000	6300	9100	6400	8500 J	7100 J	5200 J	3800 J
Selenium	H	0.9	UL	UL	UL	UL				
Silver	P	10	R	R	R	R	R	UL	R	UL
Sodium	A	500	280000	26000	58000	62000	420000	450000	32000	36000
Thallium	F	5.0	UL	UL	UL	UL	UL	UL	UL	UL
Vanadium	P	50	88							
Zinc	P	20	220 U		30 U		86 U	28 J	44 U	
Cyanide	C	10	UL	NA	UL	NA	UL	NA	UL	NA

NOTES:

- \- Element was not detected.
- U This analyte should be considered "not detected" since it was detected in a blank at a similar level.
- R Unreliable result - Analyte may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
- UL This analyte was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.
- NA Not analyzed.

ANALYTICAL METHOD:

- P - Inductively Coupled Plasma
- F - Graphite Furnace Atomic Absorption
- CV - Cold Vapor Atomic Absorption
- C - Manual Spectrophotometric
- A - Flame Atomic Absorption
- H - Hydride Generation

INORGANIC ANALYSIS - ANALYTICAL RESULTS				-page 7
ERA North Central Sample Number			LO-16104L-GW	LO-16104L-GW
Laboratory Sample Number			111908-9	111908-9
Remarks			Total	Dissolved
Units			ug/L	ug/L
INORGANIC ELEMENTS		Detection Limit		
Aluminum	P	200	900 J	R
Antimony	P	60		UL
Arsenic	H	4.5		
Barium	P	50	70	55 J
Beryllium	P	5.0		UL
Cadmium	P	5.0	5 J	R
Calcium	P	1000	120000 J	110000 J
Chromium	P	10	38	
Cobalt	P	50	UL	UL
Copper	P	25	UL	UL
Iron	P	50	6800 J	
Lead	F	2.0	5.8	
Magnesium	P	1000	78000 J	78000 J
Manganese	P	15	280 J	510 J
Mercury	CV	0.20		UL
Nickel	P	40		UL
Potassium	P	500	36000	34000
Selenium	H	4.5		
Silver	P	10	R	UL
Sodium	A	500	95000	110000
Thallium	F	5.0	UL	UL
Vanadium	P	50		
Zinc	P	20	92 U	23 J
Cyanide	C	10	UL	NA

NOTES:

- Element was not detected.
- U This analyte should be considered "not detected" since it was detected in a blank at a similar level.
- R Unreliable result - Analyte may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
- UL This analyte was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.
- NA Not analyzed.

ANALYTICAL METHOD:

- P - Inductively Coupled Plasma
- F - Graphite Furnace Atomic Absorption
- CV - Cold Vapor Atomic Absorption
- C - Manual Spectrophotometric
- A - Flame Atomic Absorption
- H - Hydride Generation

INORGANIC ANALYSIS - ANALYTICAL RESULTS -page 8

ERM North Central Sample Number		LO-161840-GW	LO-161840-GW	LO-161806DR-GW	LO-161806DR-GW	LO-161806S-MO	LO-1MW04S-FD	LO-1MW04S-FD
Laboratory Sample Number		111908-2	111908-2	111908-11	111908-11	111928-1	111918-2	111918-2
Remarks		Total	Dissolved	Total	Dissolved		Total	Dissolved
Units		ug/L	ug/L	ug/L	ug/L	mg/Kg	ug/L	ug/L
INORGANIC ELEMENTS		Detection Limit					Duplicate of LO-1MW04S-GW	Duplicate of LO-1MW04S-GW
Aluminum	P	200/38	3500 J	R	840 J	R	88000 J	R
Antimony	P	60/12		UL		UL	UL	R
Arsenic	M	4.5/0.87	8.8 J	6.7			130 J	34
Barium	P	50/9.6	140	UL	120	110 J	520	100 J
Beryllium	P	5.0/0.96		UL		UL	12 J	UL
Cadmium	P	5.0/0.96		R		R	6 J	9 J
Calcium	P	1000/200	350000 J	130000 J	190000 J	130000 J	1190000 J	200000 J
Chromium	P	10/1.9	75				130	
Cobalt	P	50/9.6	55 J	UL	UL	UL	180	UL
Copper	P	25/4.8	UL	UL	UL	UL	110	UL
Iron	P	50/9.6	17000 J	1000	4700 J	700 J	16 J	160000	610 J
Lead	F	2.0/.38	6.3	7.2	5.9	UL	0.66 J	740 J	4.2 J
Magnesium	P	1000/200	190000 J	70000 J	94000 J	58000 J	UL	750000 J	210000
Manganese	P	15/2.9	370	UL	120	UL		3300	170
Mercury	CV	0.20/0.067		UL		UL	UL	0.37 J	
Nickel	P	40/7.7	170	UL		UL		150	UL
Potassium	P	500/96	9000 J	6500 J	14000 J	15000 J		110000 J	63000
Selenium	M	4.5/0.87					UL	UL	UL
Silver	P	10/1.9	R	UL	R	UL	UL	R	R
Sodium	A	500/.96	130000	130000	170000	180000		840000	890000
Thallium	F	5.0/9.6	UL	UL	UL	UL	UL	UL	UL
Vanadium	P	50/9.6						150	
Zinc	P	20/3.8	92 U		39 U		4.2 J	660	42 J
Cyanide	C	10/1.9	UL	NA	12 J	NA		73 J	NA

NOTES:

- \- Element was not detected.
- U This analyte should be considered "not detected" since it was detected in a blank at a similar level.
- R Unreliable result - Analyte may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
- UL This analyte was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.
- NA Not analyzed.

ANALYTICAL METHOD:

- P - Inductively Coupled Plasma
- F - Graphite Furnace Atomic Absorption
- CV - Cold Vapor Atomic Absorption
- C - Manual Spectrophotometric
- A - Flame Atomic Absorption
- M - Hydride Generation

INORGANIC ANALYSIS - ANALYTICAL RESULTS -page 9

ERM North Central Sample Number			LO-1MW05S-FD	LO-1MW05S-FD	LO-1GW2-FB	LO-1GW2-FB	LO-1GW3-FB	LO-1GW3-FB
Laboratory Sample Number			111908-8	111908-8	111908-3	111908-3	111918-4	111918-4
Remarks			Total	Dissolved	Total	Dissolved	Total	Dissolved
Units			ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
INORGANIC ELEMENTS		Detection Limit	Duplicate of LO-1MW05S-GW	Duplicate of LO-1MW05S-GW	Field Blank	Field Blank	Field Blank	Field Blank
Aluminum	P	200	29000 J	R	R	R	1200 J	R
Antimony	P	60		UL		UL	R	R
Arsenic	M	4.5	21 J	23				
Barium	P	50	400	62 J		UL		R
Beryllium	P	5.0	15 J	UL		UL	UL	UL
Cadmium	P	5.0	11 J	R		R	R	R
Calcium	P	1000	1300000 J	120000 J	6300 J		38000 J	
Chromium	P	10	44					
Cobalt	P	50	170 J	UL	UL	UL	UL	UL
Copper	P	25	45 J	UL	UL	UL	UL	UL
Iron	P	50	140000 J	1600	150 J		4400	
Lead	F	2.0	300		UL		2.2	UL
Magnesium	P	1000	780000 J	58000 J	3300 J	UL	21000 J	
Manganese	P	15	3800	220	R	UL	73	
Mercury	CV	0.20	0.33	UL		UL		
Nickel	P	40	120	UL		UL	UL	UL
Potassium	P	500	14000 J	4100 J	UL	UL	UL	UL
Selenium	M	4.5					UL	UL
Silver	P	10	R	UL	R	UL	R	R
Sodium	A	500	140000 J	200000 J	2400		790	
Thallium	F	5.0	UL	UL	UL	UL	UL	UL
Vanadium	P	50						
Zinc	P	20	220		22 J		47 J	
Cyanide	C	10	UL	NA	UL	NA	UL	NA

NOTES:

- Element was not detected.
- U This analyte should be considered "not detected" since it was detected in a blank at a similar level.
- R Unreliable result - Analyte may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified *during the quality assurance review (data validation)*.
- UL This analyte was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.
- NA Not analyzed.

ANALYTICAL METHOD:

- P - Inductively Coupled Plasma
- F - Graphite Furnace Atomic Absorption
- CV - Cold Vapor Atomic Absorption
- C - Manual Spectrophotometric
- A - Flame Atomic Absorption
- H - Hydride Generation

VOLATILE ORGANIC ANALYSIS - ANALYTICAL RESULTS -page 20

ERM-North Central Sample Number LO-	1GW-TB1	1GW-TB	1GW-TB3
Laboratory Sample Number	111908-13	111918-8	111928-2
Remarks	Trip Blank	Trip Blank	Trip Blank
Units	ug/L	ug/L	ug/L
VOLATILE COMPOUNDS	Quantitation Limit			
cis-1,3-Dichloropropene	5			UL
Bromoform	5			UL
2-Hexanone	10			UL
4-Methyl-2-Pentanone	10			UL
Tetrachloroethene	5			UL
Toluene	5	UL	UL	UL
Chlorobenzene	5	UL	UL	UL
Ethylbenzene	5	UL	UL	UL
Styrene	5	UL	UL	UL
Total Xylenes	5	UL	UL	3 J
Quantitation Limit Multiplier		1.00	1.00	1.00
Date of Sample Collection		5/7/91	5/8/91	5/2/91
Date Sample Received by Laboratory		5/8/91	5/9/91	5/13/91
Date of Sample Analysis		5/21/91	5/22/91	5/23/91
Instrument Used for Analysis MS-		HP-2	HP-4	HP-2

NOTES:

- Compound was not detected.
- U This compound should be considered "not detected" since it was detected in a blank at a similar level.
- R Unreliable result - Compound may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review.
- UL This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.

CLP - TENTATIVELY IDENTIFIED COMPOUNDS - ESTIMATED CONCENTRATIONS -page 21				
ERM-North Central Sample Number	LO-1GW-TB1	LO-1GW-TB	LO-1GW-TB3	
Laboratory Sample Number	111908-13	111918-8	111928-2	
Remarks	Trip Blank	Trip Blank	Trip Blank	
Units	ug/L	ug/L	ug/L	
COMPOUNDS				
VOLATILE COMPONENTS		-		NOTES:
Unknown (Number of Peaks)	15 (1) J		5 (1) J	
SEMIVOLATILE COMPONENTS	NA	NA	NA	

- Compound was not detected.
U This compound should be considered "not detected" since it was detected in a blank at a similar level.
R Unreliable result - Compound may or may not be present in this sample.
J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
UL This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.
NA This fraction was not analyzed.

VOLATILE ORGANIC ANALYSIS - ANALYTICAL RESULTS -page 22

ERM-North Central Sample Number	LO-	16106S-W0	16106S-W0	16106S-W0
Laboratory Sample Number		111928-1	111928-1	111928-1
Remarks		Aqueous Layer	Oil Layer	Oil Layer
Units		ug/L	ug/Kg*	ug/Kg*
VOLATILE COMPOUNDS	Quantitation Limit			Dilution Analysis of LO-16106S-W0
Chloromethane	10	UL	NA	NA
Bromomethane	10	UL	NA	NA
Vinyl Chloride	10	UL	NA	NA
Chloroethane	10	27 J	NA	NA
Methylene Chloride	5	41 U	NA	NA
Acetone	10	150 J	NA	NA
Carbon Disulfide	5	UL	NA	NA
1,1-Dichloroethene	5	UL	NA	NA
1,1-Dichloroethane	5	UL	NA	NA
Total 1,2-Dichloroethene	5	UL	NA	NA
Chloroform	5	UL	NA	NA
1,2-Dichloroethane	5	UL	NA	NA
2-Butanone	10	R	NA	NA
1,1,1-Trichloroethane	5	UL	NA	NA
Carbon Tetrachloride	5	UL	NA	NA
Vinyl Acetate	10	UL	NA	NA
Bromodichloromethane	5	UL	NA	NA
1,1,2,2-Tetrachloroethane	5	UL	NA	NA
1,2-Dichloropropane	5	UL	NA	NA
trans-1,3-Dichloropropene	5	UL	NA	NA
Trichloroethene	5	UL	NA	NA
Dibromochloromethane	5	UL	NA	NA
1,1,2-Trichloroethane	5	UL	NA	NA
Benzene	5	140 J	NA	NA

NOTES:

- Compound was not detected.
- U This compound should be considered "not detected" since it was detected in a blank at a similar level.
- R Unreliable result - Compound may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
- UL This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.
- * Reported on an "as received" basis.
- NA This fraction was not analyzed.

VOLATILE ORGANIC ANALYSIS - ANALYTICAL RESULTS -page 23

ERM-North Central Sample Number	LO-	16106S-WO	16106S-WO	16106S-WO
Laboratory Sample Number		111928-1	111928-1	111928-1
Remarks		Aqueous Layer	Oil Layer	Oil Layer
Units		ug/L	ug/Kg*	ug/Kg*
VOLATILE COMPOUNDS	Quantitation Limit			Dilution Analysis of LO-16106S-WO
cis-1,3-Dichloropropene	5	UL	NA	NA
Bromoform	5	UL	NA	NA
2-Hexanone	10	UL	NA	NA
4-Methyl-2-Pentanone	10	UL	NA	NA
Tetrachloroethene	5	UL	NA	NA
Toluene	5	360 J	NA	NA
Chlorobenzene	5	UL	NA	NA
Ethylbenzene	5	130 J	NA	NA
Styrene	5	UL	NA	NA
Total Xylenes	5	2400 J	NA	NA
Quantitation Limit Multiplier		10.0	NA	NA
Date of Sample Collection		5/9/91	NA	NA
Date Sample Received by Laboratory		5/13/91	NA	NA
Date of Sample Analysis		5/23/91	NA	NA
Instrument Used for Analysis	MS-	HP-2	NA	NA

NOTES:

- \- Compound was not detected.
- U This compound should be considered "not detected" since it was detected in a blank at a similar level.
- R Unreliable result - Compound may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
- UL This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.
- * Reported on an "as received" basis.
- NA This fraction was not analyzed.

EXTRACTABLE ORGANIC ANALYSIS - ANALYTICAL RESULTS -page 24

ERN-North Central Sample Number	LO-	16106S-WO	16106S-WO	16106S-WO
Laboratory Sample Number		111928-1	111928-1	111928-1
Remarks		Aqueous Layer	Oil Layer	Oil Layer Analyzed Twice
Units		ug/L	ug/Kg*	ug/Kg*
SEMIVOLATILE COMPOUNDS	Quantitation Limit (Aq)	Quantitation Limit (Sol)	Dilution of LO-16	Dilution Analysis of LO-16106S-WO
Phenol	10	330	13	
bis(2-Chloroethyl)ether	10	330	R	
2-Chlorophenol	10	330		
1,3-Dichlorobenzene	10	330	R	
1,4-Dichlorobenzene	10	330	R	
Benzyl Alcohol	10	330	R	
1,2-Dichlorobenzene	10	330	10 J	R
2-Methylphenol	10	330		
bis(2-Chloroisopropyl)ether	10	330	R	
4-Methylphenol	10	330	8 J	
N-Nitroso-di-n-Propylamine	10	330	R	
Hexachloroethane	10	330	R	
Nitrobenzene	10	330	R	UL/ -
Isophorone	10	330	R	UL/ -
2-Nitrophenol	10	330	UL	UL/ -
2,4-Dimethylphenol	10	330	17 UL	UL/ -
Benzoic Acid	50	1650	UL	UL/ -
bis(2-Chloroethoxy)methane	10	330	R	UL/ -
2,4-Dichlorophenol	10	330	UL	UL/ -
1,2,4-Trichlorobenzene	10	330	R	UL/ -
Naphthalene	10	330	82 R	430000 J/ 410000 J
4-Chloroaniline	10	330	R	UL/ -
Hexachlorobutadiene	10	330	R	UL/ -
4-Chloro-3-Methylphenol	10	330	UL	UL/ -
2-Methylnaphthalene	10	330	190 730000 J	1500000 J/ 1400000 J

NOTES:

- \- Compound was not detected.
- U This compound should be considered "not detected" since it was detected in a blank at a similar level.
- R Unreliable result - Compound may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
- UL This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.
- * Reported on an "as received" basis.
- NA This fraction was not analyzed.

EXTRACTABLE ORGANIC ANALYSIS - ANALYTICAL RESULTS - DRY WEIGHT BASIS -page 25

ERA-North Central Sample Number			LO-	1G1065-WO		1G1065-WO		1G1065-WO	
Laboratory Sample Number				111928-1		111928-1		111928-1	
Remarks				Aqueous Layer		Oil Layer		Oil Layer Analyzed Twice	
Units				ug/L		ug/Kg*		ug/Kg*	
SEMIVOLATILE COMPOUNDS	Quantitation Limit (Aq)	Quantitation Limit (Sol)						Dilution Analysis of LO-1G1065-WO	
Hexachlorocyclopentadiene	10	330			R			UL/	UL
2,4,6-Trichlorophenol	10	330			UL			UL/	UL
2,4,5-Trichlorophenol	50	330			UL			UL/	UL
2-Chloronaphthalene	10	330			R			UL/	UL
2-Nitroaniline	50	330			R			UL/	UL
Dimethylphthalate	10	330			R			UL/	UL
Acenaphthylene	10	330			R			UL/	UL
3-Nitroaniline	50	330			R			UL/	UL
Acenaphthene	10	330		15	430000	J		290000 J/ 320000	J
2,4-Dinitrophenol	50	330			UL			UL/	UL
4-Nitrophenol	50	330			R			UL/	UL
Dibenzofuran	10	330			53000	J		190000 J/ 420000	J
2,4-Dinitrotoluene	10	330			R			UL/	UL
2,6-Dinitrotoluene	10	330			R			UL/	UL
Diethylphthalate	10	330			R			UL/	UL
4-Chlorophenylphenylether	10	330			R			UL/	UL
Fluorene	10	1650		27	820000	J		540000 J/ 570000	J
4-Nitroaniline	50	330			R			UL/	UL
4,6-Dinitro-2-Methylphenol	50	330			UL			UL/ -	
N-Nitrosodiphenylamine	10	330		24	140000	J		240000 J/ 200000	J
4-Bromophenylphenylether	10	330			R			UL/ -	
Hexachlorobenzene	10	330			R			UL/ -	
Pentachlorophenol	50	330			UL			UL/ -	
Phenanthrene	10	330		47	510000	J		640000 J/ 520000	J

NOTES:

- \- Compound was not detected.
- U This compound should be considered "not detected" since it was detected in a blank at a similar level.
- R Unreliable result - Compound may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
- UL This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.
- * Reported on an "as received" basis.
- NA This fraction was not analyzed.

EXTRACTABLE ORGANIC ANALYSIS - ANALYTICAL RESULTS - DRY WEIGHT BASIS -page 26

ERN-North Central Sample Number	LO-	16186S-WO	16186S-WO	16186S-WO
Laboratory Sample Number		111928-1	111928-1	111928-1
Remarks		Aqueous Layer	Oil Layer	Oil Layer Analyzed Twice
Units		ug/L	ug/Kg*	ug/Kg*
SEMIVOLATILE COMPOUNDS	Quantitation Limit (Aq)	Quantitation Limit (Sol)			Dilution Analysis of LO-16186S-WO
Anthracene	10	330		R	UL/ -
Di-n-Butylphthalate	10	330		R	UL/ -
Fluoranthene	10	330		R	UL/ -
Pyrene	10	330	4 J	47000 J	28000 J/ 30000 J
Butylbenzylphthalate	10	330		R	
3,3'-Dichlorobenzidine	20	660		R	
Benzo(a)anthracene	10	330		R	
bis(2-Ethylhexyl)phthalate	10	330	15	120000 J	170000 J/ 130000 J
Chrysene	10	330		R	
Di-n-Octylphthalate	10	330		R	
Benzo(b)fluoranthene	10	330		R	
Benzo(k)fluoranthene	10	330		R	
Benzo(a)pyrene	10	330		R	
Indeno(1,2,3-cd)pyrene	10	330		R	
Dibenz(a,h)anthracene	10	330		R	
Benzo(g,h,i)perylene	10	330		R	
Quantitation Limit Multiplier			1.20	60.6	300 / 300
Date of Sample Collection			5/9/91	5/9/91	5/9/91
Date Sample Received by Laboratory			5/13/91	5/13/91	5/13/91
Date Sample Extracted			5/21/91	5/21/91	5/21/91
Date of Sample Analysis			6/6/91	6/5/91	6/11 & 6/11
Instrument Used for Analysis	GC/MS		MP-3	MP-3	MP-3

NOTES:

- Compound was not detected.
U This compound should be considered "not detected" since it was detected in a blank at a similar level.
R Unreliable result - Compound may or may not be present in this sample.
J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
UL This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.
* Reported on an "as received" basis.
NA This fraction was not analyzed.

CLP-TENTATIVELY IDENTIFIED COMPOUNDS-ESTIMATED CONCENTRATIONS -page 2)

ERM-North Central Sample Number LO-	16106S-W0	16106S-W0	16106S-W0	
Laboratory Sample Number	111928-1	111928-1	111928-1	
Remarks	Aqueous Layer	Oil Layer	Oil Layer	Dilution Analysis of LO-16106S-W0
Units	ug/L	ug/Kg*	ug/Kg*	
VOLATILE COMPONENTS				
Unknown (No. of Peaks)	436 (5)J			
C6H12 Isomer	144 (2)J			
C7H16 Isomer	140 J			
Unknown Alkane	470 J			
Ethylmethylbenzene	710 J			
SEMIVOLATILE COMPONENTS				
Unknown Ketone			- / * J	
Alkylbenzenes (No. of Peaks)			950000 (2)J/ * (2)J	
Unknown (No. of Peaks)	196 (3)J	363000 (9)J	2440000 (5)J/ * (5)J	
Dioctyl ester Hexanedioic acid	540 J			
Ethylmethylbenzene	86 J		540000 J/ -	
Unknown Aromatic (No. of Peaks)	149 (2)J	124000 (2)J	1330000 (3)J/ * (3)J	
Undecane	62 J			
Unknown Alkane (No. of Peaks)	844 (7)J	71000 (4)J	4880000 (7)J/ * (6)J	
C11H10 Isomer	63 J			
Dimethylnaphthalene (No. of Peaks)	197 (2)J			
2,6,10,14-Tetramethyl-pentadecane	160 J			
3-Methyl-octadecane	140 J			
2,3,4-Trimethyl-pentane		16000 J		
Methylbenzene (Toluene)		16000 J		
Dimethyl-octane		11000 J	370000 J/ * (3)J	
C7H12 Isomer		10000 J		
Nonane		57000 J		
Unknown Cyclohexane			390000 / -	
2,3,4-Trimethyl-pentane				

NOTES:

- \- Compound was not detected.
- U This compound should be considered "not detected" since it was detected in a blank at a similar level.
- R Unreliable result - Compound may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
- UL This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.
- * Reported on an "as received" basis.
- NA This fraction was not analyzed.

EXTRACTABLE ORGANIC ANALYSIS - ANALYTICAL RESULTS -page 28

ERR-North Central Sample Number LO-	161865-WO	161865-WO	161865-WO
Laboratory Sample Number	111928-1	111928-1	111928-1
Remarks	Aqueous Layer	Oil Layer	Oil Layer
Units	ug/L	ug/Kg*	ug/Kg*

Pesticides	Quantitation Limit (Aq)	Quantitation Limit (Sol)				Dilution Analysis of LO-161865-WO
alpha-BHC	0.05	8.0	NA		R	NA
beta-BHC	0.05	8.0	NA		R	NA
delta-BHC	0.05	8.0	NA		R	NA
gamma-BHC (Lindane)	0.05	8.0	NA		R	NA
Heptachlor	0.05	8.0	NA		R	NA
Aldrin	0.05	8.0	NA		R	NA
Heptachlor Epoxide	0.05	8.0	NA	510	R	NA
Endosulfan I	0.05	8.0	NA		R	NA
Dieldrin	0.10	16	NA		R	NA
4,4'-DDE	0.10	16	NA		R	NA
Endrin	0.10	16	NA		R	NA
Endosulfan II	0.10	16	NA		R	NA
4,4'-DDD	0.10	16	NA		R	NA
Endosulfan Sulfate	0.10	16	NA		R	NA
4,4'-DDT	0.10	16	NA		R	NA
Methoxychlor	0.50	80	NA	1300	R	NA
Endrin Ketone	0.10	16	NA	4800	R	NA
alpha-Chlordane	0.50	80	NA		R	NA
gamma-Chlordane	0.50	80	NA		R	NA
Toxaphene	1.0	160	NA		R	NA

NOTES:

- Compound was not detected.
- U This compound should be considered "not detected" since it was detected in a blank at a similar level.
- R Unreliable result - Compound may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
- UL This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.
- * Reported on an "as received" basis.
- NA This fraction was not analyzed.

EXTRACTABLE ORGANIC ANALYSIS - ANALYTICAL RESULTS - DRY WEIGHT BASIS -page 29

ERM-North Central Sample Number			LO-	16106S-WO	16106S-WO	16106S-WO
Laboratory Sample Number				111928-1	111928-1	111928-1
Remarks				Aqueous Layer	Oil Layer	Oil Layer
Units				ug/L	ug/Kg*	ug/Kg*
PCBs	Quantitation Limit (Aq)	Quantitation Limit (Sol)				Dilution Analysis of LO-16106S-WO
Aroclor-1016	0.5	80		NA		NA
Aroclor-1221	0.5	80		NA		NA
Aroclor-1232	0.5	80		NA		NA
Aroclor-1242	0.5	80		NA	1130	NA
Aroclor-1248	0.5	80		NA	R	NA
Aroclor-1254	1.0	160		NA	R	NA
Aroclor-1260	1.0	160		NA	R	NA
Quantitation Limit Multiplier				NA	15	NA
Date of Sample Collection				NA	5/9/91	NA
Date Sample Received by Laboratory				NA	5/13/91	NA
Date Sample Extracted				NA	5/21/91	NA
Date of Sample Analysis				NA	5/29/91	NA

NOTES:

- Compound was not detected.
- U This compound should be considered "not detected" since it was detected in a blank at a similar level.
- R Unreliable result - Compound may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
- UL This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.
- * Reported on an "as received" basis.
- NA This fraction was not analyzed.

EXTRACTABLE ORGANIC ANALYSIS - ANALYTICAL RESULTS

ERM-North Central Sample Number	LO-	1RW01S-GW	1RW01D-GW	1RW02S-GW	1RW02D-GW	1RW03S-GW	1RW03D-GW	1RW04S-GW	1RW04D-GW	1RW05S-GW	1RW05D-GW	1RW06S-GW	1RW06D-GW	1RW07S-GW	1RW07D-GW	161031-GW	16106DR-MS/MSD
Laboratory Sample Number		111897-7	111897-6	111918-3	111908-6	111897-8	111897-9	111918-6	111908-1	111908-7	111908-10	111918-5	111918-1	111908-5	111908-4	111897-5	111908-12
Remarks																	
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
PCBs	Quant. Limit																
Aroclor-1016	0.5																
Aroclor-1221	0.5																
Aroclor-1232	0.5																
Aroclor-1242	0.5									645							
Aroclor-1248	0.5									350							
Aroclor-1254	1.0																
Aroclor-1260	1.0									120							
Quantitation Limit Multiplier		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	10.0	10.0	1.00	1.00	1.00	1.00	1.00	1.00
Date of Sample Collection		5/6/91	5/6/91	5/8/91	5/7/91	5/6/91	5/6/91	5/8/91	5/7/91	5/7/91	5/7/91	5/8/91	5/8/91	5/7/91	5/7/91	5/6/91	5/7/91
Date Sample Received by Laboratory		5/7/91	5/7/91	5/9/91	5/8/91	5/7/91	5/7/91	5/9/91	5/8/91	5/8/91	5/8/91	5/9/91	5/9/91	5/8/91	5/8/91	5/7/91	5/8/91
Date Sample Extracted		5/10/91	5/10/91	5/14/91	5/10/91	5/10/91	5/10/91	5/14/91	5/10/91	5/10/91	5/10/91	5/14/91	5/14/91	5/10/91	5/10/91	5/10/91	5/10/91
Date of Sample Analysis		5/21/91	5/21/91	5/21/91	5/20/91	5/21/91	5/22/91	5/21/91	5/17/91	5/22/91	5/20/91	5/21/91	5/21/91	5/17/91	5/17/91	5/17/91	6/4/91

NOTES:

- Compound was not detected.
- U This compound should be considered "not detected" since it was detected in a blank at a similar level.
- R Unreliable result - Compound may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
- UL *This compound was not detected, but the quantitation limit* is probably higher due to a low bias identified during the quality assurance review.

VOLATILE ORGANIC ANALYSIS - ANALYTICAL RESULTS

ERM-North Central Sample Number	LO-	1G101R-GW	1G101D-GW	1G102L-GW	1G102D-GW	1G104L-GW	1G104D-GW	1G106DR-GW	1MW03S-FD	1MW04S-FD	1MW05S-FD	1GW1-FB	1GW2-FB	1GW3-FB	GW6-TB	1MW02S-MS/MSD
Laboratory Sample Number		111897-4	111897-3	111897-2	111897-1	111908-9	111908-2	111908-11	111897-10	111918-2	111908-8	111897-11	111908-3	111918-4	111897-12	111918-7
Remarks									Duplicate of LO-1MW03S-GW	Duplicate of LO-1MW04S-GW	Duplicate of LO-1MW05S-GW	Field Blank	Field Blank	Field Blank	Trip Blank	
Units		ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
VOLATILE COMPOUNDS	Quant. Limit								Analyzed Twice		Analyzed Twice	Analyzed Twice			Analyzed Twice	
Chloromethane	10								- / UL		UL / -					
Bromomethane	10								- / UL		UL / -					
Vinyl Chloride	10				13				- / UL		UL / -					
Chloroethane	10			4 J	5 J			53	- / UL		UL / -					
Methylene Chloride	5			5 U	5 U	5 U	5 U	7 U	- / 27 U	6 U	58 U/ 58 U	-/ 16 J	4 J	8 J	-/ 15 J	5 U
Acetone	10								- / UL		UL / -					
Carbon Disulfide	5								- / UL		UL / -					
1,1-Dichloroethene	5		2 J	5	3 J				- / UL		UL / -					
1,1-Dichloroethane	5			50	70		4 J		- / UL	2 J	UL / -					2 J
Total 1,2-Dichloroethene	5			21	15				- / UL		UL / -					3 J
Chloroform	5		3 J						- / UL		UL / -					
1,2-Dichloroethane	5								- / UL		31 J/ 28 J					
2-Butanone	10	R	R	R	R	R	R	R	R / R	R	R / R	R / R	R	R	R / R	R
1,1,1-Trichloroethane	5		2 J	120	83						UL / UL					
Carbon Tetrachloride	5		3 J								UL / UL					
Vinyl Acetate	10										UL / UL					
Bromodichloromethane	5										UL / UL					
1,1,2,2-Tetrachloroethane	5															
1,2-Dichloropropane	5										UL / UL					
trans-1,3-Dichloropropene	5										UL / UL					
Trichloroethene	5			6	3 J						UL / UL					
Dibromochloromethane	5										UL / UL					
1,1,2-Trichloroethane	5										UL / UL					
Benzene	5							UL	-/ UL	UL	UL / UL			UL	UL / UL	UL

VOLATILE ORGANIC ANALYSIS - ANALYTICAL RESULTS -page 11

ERM-North Central Sample Number LO-	161018-GW	161010-GW	16102L-GW	16102D-GW	16104L-GW	16104D-GW	16106DR-GW	1MW03S-FD	1MW04S-FD	1MW05S-FD	1GW1-FB	1GW2-FB	1GW3-FB	GW6-TB	1MW02S-MS/MSD
Laboratory Sample Number	111897-4	111897-3	111897-2	111897-1	111908-9	111908-2	111908-11	111897-10	111918-2	111908-8	111897-11	111908-3	111918-4	111897-12	111918-7
Remarks								Duplicate of LO-1MW03S-GW	Duplicate of LO-1MW04S-GW	Duplicate of LO-1MW05S-GW	Field Blank	Field Blank	Field Blank	Trip Blank	
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
VOLATILE COMPOUNDS	Quant. Limit							Analyzed Twice		Analyzed Twice	Analyzed Twice			Analyzed Twice	
cis-1,3-Dichloropropene	5									UL / UL					
Bromoform	5									UL / UL					
2-Hexanone	10														
4-Methyl-2-Pentanone	10														
Tetrachloroethene	5		2 J	3 J				2 J/ -							
Toluene	5						UL	5 U/ UL	UL	UL / UL	3 J/ -		UL	UL/ UL	UL
Chlorobenzene	5						UL	-/ UL	UL	UL / UL			UL	UL/ UL	UL
Ethylbenzene	5						UL	-/ UL	UL	350 J/ 370 J			UL	UL/ UL	UL
Styrene	5						UL	-/ UL	UL	UL / UL			UL	UL/ UL	UL
Total Xylenes	5		5 U	5 U			UL	12 U/ UL	UL	920 J/ 890 J	11 J/ -		UL	UL/ UL	UL
Quantitation Limit Multiplier	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00/ 1.00	1.00	10.0/ 10.0	1.00/ 1.00	1.00	1.00	1.00	1.00
Date of Sample Collection	5/6/91	5/6/91	5/6/91	5/6/91	5/7/91	5/7/91	5/7/91	5/6/91	5/8/91	5/7/91	5/6/91	5/7/91	5/8/91	5/2/91	5/8/91
Date Sample Received by Laboratory	5/7/91	5/7/91	5/7/91	5/7/91	5/8/91	5/8/91	5/8/91	5/7/91	5/9/91	5/8/91	5/7/91	5/8/91	5/9/91	5/7/91	5/9/91
Date of Sample Analysis	5/12/91	5/12/91	5/12/91	5/12/91	5/14/91	5/14/91	5/21/91	5/12 & 5/13	5/22/91	5/17 & 5/17	5/12 & 5/13	5/14/91	5/22/91	5/12 & 5/13	5/22/91
Instrument Used for Analysis RS-	HP-2	HP-2	HP-2	HP-2	HP-4	HP-4	HP-2	HP-2/ HP-2	HP-4	HP-2/ HP-4	HP-2/ HP-2	HP-4	HP-2	HP-2/ HP-2	HP-2

NOTES:

- Compound was not detected.
- U This compound should be considered "not detected" since it was detected in a blank at a similar level.
- R Unreliable result - Compound may or may not be present in this sample.
- J *Quantitation is approximate due to limitations* identified during the quality assurance review (data validation.
- UL This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.

EXTRACTABLE ORGANIC ANALYSIS - ANALYTICAL RESULTS

ERM-North Central Sample Number / Laboratory Sample Number	LO-	16101N-GW 111897-4	16101D-GW 111897-3	16102L-GW 111897-2	16102D-GW 111897-1	16104L-GW 111908-9	16104D-GW 111908-2	16106DR-GW 111908-11	1MW03S-FD 111897-10	1MW04S-FD 111918-2	1MW05S-FD 111908-8		1GW1-FB 111897-11	1GW2-FB 111908-3	1GW3-FB 111918-4	GW6-TB 111897-12	1MW02S-MS/MSD 111918-7
Remarks									Duplicate of LO-1MW03S-GW	Duplicate of LO-1MW04S-GW	Original/ Dilution/ Reanalyses	Duplicate of LO-1MW05S-GW	Field Blank	Field Blank	Field Blank	Trip Blank	
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		ug/L	ug/L	ug/L	ug/L	ug/L
SEMIVOLATILE COMPOUNDS	Quant. Limit										Analyzed						
Phenol	10										R/	R/ R				NA	
bis(2-Chloroethyl)ether	10															NA	
2-Chlorophenol	10										R/	R/ R				NA	
1,3-Dichlorobenzene	10															NA	
1,4-Dichlorobenzene	10															NA	
Benzyl Alcohol	10															NA	
1,2-Dichlorobenzene	10															NA	
2-Methylphenol	10										R/	R/ R				NA	
bis(2-Chloroisopropyl)ether	10															NA	
4-Methylphenol	10										R/	R/ R				NA	
N-Nitroso-di-n-Propylamine	10															NA	
Hexachloroethane	10															NA	
Nitrobenzene	10										UL/	-/ -				NA	
Isophorone	10										UL/	-/ -				NA	
2-Nitrophenol	10										R/	-/ R				NA	
2,4-Dimethylphenol	10									2 J	R/	-/ R				NA	
Benzoic Acid	50									27 J	R/	R/ R				NA	
bis(2-Chloroethoxy)methane	10										UL/	-/ -				NA	
2,4-Dichlorophenol	10										R/	R/ R				NA	
1,2,4-Trichlorobenzene	10										UL/	-/ -				NA	
Naphthalene	10										1800 J/	2400 / 1100				NA	
4-Chloroaniline	10										UL/	-/ -				NA	
Hexachlorobutadiene	10										UL/	-/ -				NA	
4-Chloro-3-Methylphenol	10										R/	R/ R				NA	
2-Methylnaphthalene	10																

EXTRACTABLE ORGANIC ANALYSIS - ANALYTICAL RESULTS -page 13

ERM-North Central Sample Number LO-	16101M-GW	16101D-GW	16102L-GW	16102D-GW	16104L-GW	16104D-GW	16106DR-GW	1MW03S-FD	1MW04S-FD	1MW05S-FD		1GW1-FB	1GW2-FB	1GW3-FB	GW6-TB	1MW02S-MS/MSD
Laboratory Sample Number	111897-4	111897-3	111897-2	111897-1	111908-9	111908-2	111908-11	111897-10	111918-2	111908-8		111897-11	111908-3	111918-4	111897-12	111918-7
Remarks								Duplicate of LO-1MW03S-GW	Duplicate of LO-1MW04S-GW	Original/ Dilution/ Reanalyses	Duplicate of LO-1MW05S-GW	Field Blank	Field Blank	Field Blank	Trip Blank	
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		ug/L	ug/L	ug/L	ug/L	ug/L
SEMIVOLATILE COMPOUNDS	Quant. limit															
Hexachlorocyclopentadiene	10									UL/	UL/ UL				NA	
2,4,6-Trichlorophenol	10									R/	R/ R				NA	
2,4,5-Trichlorophenol	50									R/	R/ R				NA	
2-Chloronaphthalene	10									UL/	UL/ UL				NA	
2-Nitroaniline	50									UL/	UL/ UL				NA	
Dimethylphthalate	10									UL/	UL/ UL				NA	
Acenaphthylene	10									UL/	UL/ UL				NA	
3-Nitroaniline	50									UL/	UL/ UL				NA	
Acenaphthene	10									UL/	UL/ UL				NA	
2,4-Dinitrophenol	50									R/	R/ R				NA	
4-Nitrophenol	50									R/	R/ R				NA	
Dibenzofuran	10									660 J/	560 J/ 670 J				NA	
2,4-Dinitrotoluene	10									UL/	UL/ UL				NA	
2,6-Dinitrotoluene	10									UL/	UL/ UL				NA	
Diethylphthalate	10									UL/	UL/ UL				NA	
4-Chlorophenylphenylether	10									UL/	UL/ UL				NA	
Fluorene	10									870 J/	1300 J/ 930 J				NA	
4-Nitroaniline	50									UL/	UL/ UL				NA	
4,6-Dinitro-2-Methylphenol	50									R/	R/ R/				NA	
N-Nitrosodiphenylamine	10									UL/	UL/ UL				NA	
4-Bromophenylphenylether	10									UL/	UL/ UL				NA	
Hexachlorobenzene	10									UL/	UL/ UL				NA	
Pentachlorophenol	50									R/	R/ R				NA	
Phenanthrene	10									2300 J/	3200 J/ 3600 J				NA	

EXTRACTABLE ORGANIC ANALYSIS - ANALYTICAL RESULTS

ERM-North Central Sample Number LO-	161018-GW	161018-GW	161028-GW	161028-GW	161048-GW	161048-GW	161068-GW	1MW03S-FD	1MW04S-FD	1MW05S-FD		16W1-FB	16W2-FB	16W3-FB	GW6-TB	1MW02S-MS/MSD
Laboratory Sample Number	111897-4	111897-3	111897-2	111897-1	111908-9	111908-2	111908-11	111897-10	111918-2	111908-8		111897-11	111908-3	111918-4	111897-12	111918-7
								Duplicate of	Duplicate of	Original/ Dilution/	Duplicate of	Field Blank	Field Blank	Field Blank	Trip Blank	
Remarks								LO-1MW03S-GW	LO-1MW04S-GW	Reanalyses	LO-1MW05S-GW					
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		ug/L	ug/L	ug/L	ug/L	ug/L
SEMIVOLATILE COMPOUNDS	Quant. Limit															
Anthracene	10									150 J/	UL/ 210 J				NA	
Di-n-Butylphthalate	10									UL/	UL/ UL				NA	
Fluoranthene	10									75 J/	UL/ 130 J				NA	
Pyrene	10									160 J/	UL/ 99 J				NA	
Butylbenzylphthalate	10									UL/	UL/ -			5 J	NA	
3,3'-Dichlorobenzidine	20									UL/	UL/ -				NA	
Benzo(a)anthracene	10									UL/	UL/ -				NA	
bis(2-Ethylhexyl)phthalate	10									520 J/	640 J/ 530				NA	
Chrysene	10									UL/	UL/ -				NA	
Di-n-Octylphthalate	10									UL/	UL/ -				NA	
Benzo(b)fluoranthene	10									UL/	UL/ -				NA	
Benzo(k)fluoranthene	10									UL/	UL/ -				NA	
Benzo(a)pyrene	10									UL/	UL/ -				NA	
Indeno(1,2,3-cd)pyrene	10									UL/	UL/ -				NA	
Dibenz(a,h)anthracene	10									UL/	UL/ -				NA	
Benzo(g,h,i)perylene	10									UL/	UL/ -				NA	
Quantitation Limit Multiplier		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	10.0/50.0/10.0	1.00	1.00	1.00	NA	1.00
Date of Sample Collection		5/6/91	5/6/91	5/6/91	5/6/91	5/7/91	5/7/91	5/7/91	5/6/91	5/8/91	5/7/91	5/6/91	5/7/91	5/8/91	NA	5/8/91
Date Sample Received by Laboratory		5/7/91	5/7/91	5/7/91	5/7/91	5/8/91	5/8/91	5/8/91	5/7/91	5/9/91	5/8/91	5/7/91	5/8/91	5/9/91	NA	5/9/91
Date Sample Extracted		5/10/91	5/10/91	5/10/91	5/10/91	5/10/91	5/10/91	5/10/91	5/10/91	5/14/91	5/10/91	5/10/91	5/10/91	5/14/91	NA	5/14/91
Date of Sample Analysis		6/4/91	6/4/91	6/4/91	6/4/91	6/4/91	5/23/91	5/23/91	5/22/91	5/30/91	5/27, 5/30 & 5/31	5/22/91	5/23/91	5/30/91	NA	5/31/91
Instrument Used for Analysis GCMS-		HP-1	HP-1	HP-1	HP-1	HP-1	HP-1	HP-1	HP-1	HP-1	HP-1/HP-1/HP-1	HP-1	HP-1	HP-1	NA	HP-1

CLP - TENTATIVELY IDENTIFIED COMPOUNDS - ESTIMATED CONCENTRATIONS

ERM-North Central Sample Number	LO-16101N-GW	16101D-GW	16102L-GW	16102D-GW	16104L-GW	16104D-GW	16106OR-GW	1MW03S-FD	1MW04S-FD	1MW05S-FD	16W1-FB	16W2-FB	16W3-FB	6W6-TB	1MW02S-MS/MSD
Laboratory Sample Number	111897-4	111897-3	111897-2	111897-1	111908-9	111908-2	111908-11	111897-10	111918-2	111908-8	111897-11	111908-3	111918-4	111897-12	111918-7
Remarks								Duplicate of LO-1MW03S-GW	Duplicate of LO-1MW04S-GW	Duplicate of LO-1MW05S-GW	Field Blank	Field Blank	Field Blank	Trip Blank	
Units	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
VOLATILE COMPONENTS	-		-			-		Analyzed Twice		Analyzed Twice	Analyzed Twice			Analyzed Twice	-
Unknown (Number of Peaks)		5 (1)J		21 (1)J	11 (1)J		52 (2)J		149 (2)J	9528 (6)J/2717 (8)J		6 (1)J	5 (1)J		
Blank Contaminants								- / 84 R			- / 49 R			- / 78 R	

- Compound was not detected.
U This compound should be considered "not detected" since it was detected in a blank at a similar level.
R Unreliable result - Compound may or may not be present in in this sample.
J Quantitation is approximate due to limitations identified during the quality assurance review.
UL This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.
NA This fraction was not analyzed.

CLP - TENTATIVELY IDENTIFIED COMPOUNDS - ESTIMATED CONCENTRATIONS																-page 16
ERM-North Central Sample Number LO-	16101M-GW	16101D-GW	16102L-GW	16102D-GW	16104L-GW	16104D-GW	16106DR-GW	1MW03S-FD	1MW04S-FD	1MW05S-FD		1GW1-FB	1GW2-FB	1GW3-FB	GW6-TB	1MW02S-MS/MSD
Laboratory Sample Number	111897-4	111897-3	111897-2	111897-1	111908-9	111908-2	111908-11	111897-10	111918-2	111908-8		111897-11	111908-3	111908-4	111897-12	111918-7
Remarks								Duplicate of LO-1MW03S-GW	Duplicate of LO-1MW04S-GW	Duplicate of LO-1MW05S-GW		Field Blank	Field Blank	Field Blank	Trip Blank	
Units	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l		ug/l	ug/l	ug/l	ug/l	ug/l
SEMIVOLATILE COMPONENTS										Analyzed Three Times						
Trimethylbenzene							2 (1)J									
Ethyldimethylbenzene										- / 4000 J/ -						
Dimethylbenzene							6 (2)J			760 J/ - / -						
Unknown Alkane (No. of Peaks)					6 (1)J					5330 (18)J/251200 (16)J/38440 (9)J						
Unknown Cyclohexanes (No. of Peaks)										540 (2)J/ - / 5980 (1)J						
Bis(1,1-Dimethyl-ethyl)phenol					2 J		3 J									
Blank Contaminants (No. of Peaks)	39 (5)R	40 (5)R	322 (5)R	1055 (6)R		15 (4)R			6 (1)R	580 (1)R/ - / -		2 (1)R				
Unknown (No. of Peaks)	9 (3)J	8 (3)J	18 (8)J	33 (3)J	38 (5)J	10 (4)J	107 (10)J	5 (1)J	385 (12)J	1850 (4)J/ 4900 (1)J/ 19380 (10)				6 (2)J		31 (2)J
Unknown Phthalate (No. of Peaks)	7 (2)J	7 (2)J	7 (2)J	8 (2)J										2 (1)J		
Hexadecanoic Acid			8 J		10 J											
Ethylbenzene (VOA Target)							2 (1)J									
Methylbenzene (VOA Target)			2 J				2 J	3 J								
1,1-Biphenyl-2-ol	2 J															
2-Methyl-1(1,1-dimethylethyl)propanoic Acid								2 J				2 J				
Dioctylester Hexadecanoic Acid								490 J				640 J				
Unknown Oxygenated Compound (No. of Peaks)												26 (2)J				
Unknown Aromatic (No. of Peaks)							7 (2)J			320 (1)J/ 5300 (1)J/ -						
Unknown Polyaromatic Hydrocarbon										530 J/ - / -						
Dimethylpyridine (No. of Peaks)									29 (2)J							
5-Ethyl-2-Methylpyridine									20 J							
3,3,5-Trimethyl-cyclohexane (No. of Peaks)							3 (1)J		157 (2)J							
Tetramethylbutyl Phenol									13 J							
Unknown Carboxylic Acid									11 J							
Laboratory Artifact (No. of Peaks)					2 (1)R		5 (1)R						10 (3)R	2 (1)R		
Dimethylnaphthalene										- / 16000 J/ -						

EXTRACTABLE ORGANIC ANALYSIS - ANALYTICAL RESULTS

ERM-North Central Sample Number	LO-	1G101M-GW	1G101D-GW	1G102L-GW	1G102D-GW	1G104L-GW	1G104D-GW	1G106DR-GW	1MW03S-FD	1MW04S-FD	1MW05S-FD	1GW1-FB	1GW2-FB	1GW3-FB	GW6-TB	1MW02S-MS/MSD
Laboratory Sample Number		111897-4	111897-3	111897-2	111897-1	111908-9	111908-2	111908-11	111897-10	111918-2	111908-8	111897-11	111908-3	111908-4	111897-12	111918-7
Remarks									Duplicate of LO-1MW03S-GW	Duplicate of LO-1MW04S-GW	Duplicate of LO-1MW05S-GW	Field Blank	Field Blank	Field Blank	Trip Blank	
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Pesticides	Quant. Limit															
alpha-BHC	0.05														NA	
beta-BHC	0.05														NA	
delta-BHC	0.05														NA	
gamma-BHC (Lindane)	0.05														NA	
Heptachlor	0.05														NA	
Aldrin	0.05														NA	
Heptachlor Epoxide	0.05														NA	
Endosulfan I	0.05														NA	
Dieldrin	0.10														NA	
4,4'-DDE	0.10														NA	
Endrin	0.10														NA	
Endosulfan II	0.10														NA	
4,4'-DDD	0.10														NA	
Endosulfan Sulfate	0.10														NA	
4,4'-DDT	0.10														NA	
Methoxychlor	0.50														NA	
Endrin Ketone	0.10														NA	
alpha-Chlordane	0.50														NA	
gamma-Chlordane	0.50														NA	
Toxaphene	1.0														NA	

EXTRACTABLE ORGANIC ANALYSIS - ANALYTICAL RESULTS

ERM-North Central Sample Number	LO-	16101N-GW	161010-GW	16102L-GW	16102D-GW	16104L-GW	16104D-GW	161060R-GW	1MW03S-FD	1MW04S-FD	1MW05S-FD	16W1-FB	16W2-FB	16W3-FB	GW6-TB	1MW02S-MS/MSD
Laboratory Sample Number		111897-4	111897-3	111897-2	111897-1	111908-9	111908-2	111908-11	111897-10	111918-2	111908-8	111897-11	111908-3	111908-4	111897-12	111918-7
Remarks									Duplicate of LO-1MW03S-GW	Duplicate of LO-1MW04S-GW	Duplicate of LO-1MW05S-GW	Field Blank	Field Blank	Field Blank	Trip Blank	
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
PCBs	Quant. Limit															
Aroclor-1221	0.5														NA	
Aroclor-1221	0.5														NA	
Aroclor-1232	0.5														NA	
Aroclor-1242	0.5														NA	
Aroclor-1248	0.5										420				NA	
Aroclor-1254	1.0														NA	
Aroclor-1260	1.0										160				NA	
Quantitation Limit Multiplier		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	10.0	1.00	1.00	1.00	NA	1.00
Date of Sample Collection		5/6/91	5/6/91	5/6/91	5/6/91	5/7/91	5/7/91	5/7/91	5/6/91	5/8/91	5/7/91	5/6/91	5/7/91	5/8/91	NA	5/8/91
Date Sample Received by Laboratory		5/7/91	5/7/91	5/7/91	5/7/91	5/8/91	5/8/91	5/8/91	5/7/91	5/9/91	5/8/91	5/7/91	5/8/91	5/9/91	NA	5/9/91
Date Sample Extracted		5/10/91	5/10/91	5/10/91	5/10/91	5/10/91	5/10/91	5/10/91	5/10/91	5/14/91	5/10/91	5/10/91	5/10/91	5/14/91	NA	5/14/91
Date of Sample Analysis		5/17/91	5/17/91	5/17/91	5/17/91	5/20/91	5/17/91	5/20/91	5/22/91	5/21/91	5/22/91	5/22/91	5/17/91	5/29/91	NA	5/22/91

NOTES:

- \- Compound was not detected.
- U This compound should be considered "not detected" since it was detected in a blank at a similar level.
- R Unreliable result - Compound may or may not be present in in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review.
- UL This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.
- NA This fraction was not analyzed.

VOLATILE ORGANIC ANALYSIS - ANALYTICAL RESULTS -page 19

ERA-North Central Sample Number	LO-1	1GW-T81	1GW-TB	1GW-T83
Laboratory Sample Number		111908-13	111918-8	111928-2
Remarks		Trip Blank	Trip Blank	Trip Blank
Units		ug/L	ug/L	ug/L
VOLATILE COMPOUNDS	Quantitation Limit			
Chloromethane	10			UL
Bromomethane	10			UL
Vinyl Chloride	10			UL
Chloroethane	10			UL
Methylene Chloride	5	7	6	4 J
Acetone	10			UL
Carbon Disulfide	5			UL
1,1-Dichloroethene	5			UL
1,1-Dichloroethane	5			UL
Total 1,2-Dichloroethene	5			UL
Chloroform	5			2 J
1,2-Dichloroethane	5			UL
2-Butanone	10	R	R	R
1,1,1-Trichloroethane	5			UL
Carbon Tetrachloride	5			UL
Vinyl Acetate	10			UL
Bromodichloromethane	5			UL
1,1,2,2-Tetrachloroethane	5			UL
1,2-Dichloropropane	5			UL
trans-1,3-Dichloropropene	5			UL
Trichloroethene	5			UL
Dibromochloromethane	5			UL
1,1,2-Trichloroethane	5			UL
Benzene	5	UL	UL	3 J

NOTES:

- Compound was not detected.
U This compound should be considered "not detected" since it was detected in a blank at a similar level.
R Unreliable result - Compound may or may not be present in this sample.
J Quantitation is approximate due to limitations identified during the quality assurance review.
UL This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.

CLP - TENTATIVELY IDENTIFIED COMPOUNDS - ESTIMATED CONCENTRATIONS

ERM-North Central Sample Number	LQ-	IRW01S-GW	IRW01D-GW	IRW02S-GW	IRW02D-GW	IRW03S-GW	IRW03D-GW	IRW04S-GW	IRW04D-GW	IRW05S-GW	IRW05D-GW	IRW06S-GW	IRW06D-GW	IRW07S-GW	IRW07D-GW	IRW01L-GW	IG1006R-MS/MSD
Laboratory Sample Number		111897-7	111897-6	111918-3	111908-6	111897-8	111897-9	111918-6	111908-1	111908-7	111908-10	111918-5	111918-1	111908-5	111908-4	111897-5	111908-12
Remarks																	
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
COMPOUNDS																	
VOLATILE COMPONENTS						Analyzed Twice	Analyzed Twice	Analyzed Twice							-	-	
Unknown (No. of Peaks)				24 (3)J	8 (1)J			115 (4)J/ 74 (2)J	23 (1)J	5133 (8)J	77 (3)J	3 (1)J	44 (2)J	8 (1)J			357 (2)J
Blank Contaminants			98 R			- / 43 R	- / 8 R	5 R/ -									
Unknown Amide		72 J				- / 6 J											
Laboratory Artifact				200 R													
Unknown Oxygenated Compound				6 J													
3-Methylhexane										110 J							
Unknown Alkane										460 J							
SEMIVOLATILE COMPONENTS				Analyzed Twice						Analyzed Twice			Analyzed Twice			Analyzed Twice	
Blank Contaminants (No. of Peaks)		2 (1) R			8 (2)R	2 (1)R	5 (1)R		10 (3)R		23 (2)J	3 (1)R		6 (2)R	6 (2) R	2 (1)R/ 2 (1)R	6 (1)R
Unknown (No. of Peaks)		27 (5) J		33 (5)J/ 13 (1)J	27 (3)J	4 (1)J	25 (2)J	352 (12)J		18100 (6)J/ 19660 (10)J	70 (9)J	10 (3)J	17 (2)J/ 17 (3)J	2 (1)J		4 (1)J/11 (3)J	136 (14)J
Unknown Phthalate					4 J				4 J								
Alkylbenzene Isomers										- / 888 J							9 (3)J
2-Methoxy-ethanol																2 J/ -	

CLP - TENTATIVELY IDENTIFIED COMPOUNDS - ESTIMATED CONCENTRATIONS

ERM-North Central Sample Number LO-	1MW01S-GW	1MW01D-GW	1MW02S-GW	1MW02D-GW	1MW03S-GW	1MW03D-GW	1MW04S-GW	1MW04D-GW	1MW05S-GW	1MW05D-GW	1MW06S-GW	1MW06D-GW	1MW07S-GW	1MW07D-GW	1G101L-GW	1G106DR-MS/MSD
Laboratory Sample Number	111897-7	111897-6	111918-3	111908-6	111897-8	111897-9	111918-6	111908-1	111908-7	111908-10	111918-5	111918-1	111908-5	111908-4	111897-5	111908-12
Remarks																
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
COMPOUNDS									Analyzed Twice			Analyzed Twice			Analyzed Twice	
SEMIVOLATILE COMPONENTS (Cont.)																
Unknown Hydrocarbon				7 J							2 J	6 J/ -			3 J/ -	
Unknown Alkane (No. of Peaks)									44890 (13)J/ 16000 (8)J	2 (1)J						
Triethylene Glycol		15 J				30 J									17 J/ 9 J	
Unknown Oxygenated Compound (No. of Peaks)	207 (5) J		3 (1)J/-	37 (2)J				21 (1)J							3 J/ -	
2-Methyl-1(1,1-Dimethylethyl)-propanoic acid	6 J	4 J	2 J/ -		4 J	4 J									4 J/ -	
Tetramethylphenol							8 J									
3-Chloro-octane		4 J														
5-Ethyl-2-methyl-pyridine							23 J									
N-methyl-N-(1-oxododecyl)-glycine	5 J															
Dimethylpyridine (Number of Peaks)							28 (2)J									
1,4-Dioxane	20 J															
Dimethylnaphthalene										10 (3)J						
2,2-Oxybis-butane	3 J						8 J									8 (1)J
[1,1-Biphenyl]-2-ol	2 J															
1,2,3-Trimethylethylbenzene									3500 J/ -							
Dioctyl ester hexanedioic acid						100 J										
Unknown Aromatic										3 J						
Ethylmethyl benzene									- / 1100 J							
Dimethylethyl phenol isomer							18 J					2 J/ -				
Hexadecanoic acid			-/ 6 J													2 (1)J
3,3,5-Trimethyl cyclohexane (No. of Peaks)							53 (2)J									

EXTRACTABLE ORGANIC ANALYSIS - ANALYTICAL RESULTS

ERA-North Central Sample Number (0-)		1RW01S-GW	1RW01D-GW	1RW02S-GW	1RW02D-GW	1RW03S-GW	1RW03D-GW	1RW04S-GW	1RW04D-GW	1RW05S-GW	1RW05D-GW	1RW06S-GW	1RW06D-GW	1RW07S-GW	1RW07D-GW	1618IL-GW	1106DR-MS/MSD
Laboratory Sample Number		111897-7	111897-6	111918-3	111908-6	111897-8	111897-9	111918-6	111908-1	111908-7	111908-10	111918-5	111918-1	111908-5	111908-4	111897-5	111908-12
Remarks																	
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Pesticides	Quant. Limit																
alpha-BHC	0.05																
beta-BHC	0.05																
delta-BHC	0.05																
gamma-BHC (Lindane)	0.05																
Heptachlor	0.05																
Aldrin	0.05																
Heptachlor Epoxide	0.05																
Endosulfan I	0.05																
Dieldrin	0.10																
4,4'-DDE	0.10																
Endrin	0.10																
Endosulfan II	0.10																
4,4'-DDD	0.10																
Endosulfan Sulfate	0.10																
4,4'-DDT	0.10																
Methoxychlor	0.50																
Endrin Ketone	0.10																
alpha-Chlordane	0.50																
gamma-Chlordane	0.50																
Toxaphene	1.0																

VOLATILE ORGANIC ANALYSIS - ANALYTICAL RESULTS

ERM-North Central Sample Number	LO-	1MW01S-GW	1MW01D-GW	1MW02S-GW	1MW02D-GW	1MW03S-GW	1MW03D-GW	1MW04S-GW	1MW04D-GW	1MW05S-GW	1MW05D-GW	1MW06S-GW	1MW06D-GW	1MW07S-GW	1MW07D-GW	161011-GW	161006DR-MS/MSD
Laboratory Sample Number		111897-7	111897-6	111918-3	111908-6	111897-8	111897-9	111918-6	111908-1	111908-7	111908-10	111918-5	111918-1	111908-5	111908-4	111897-5	111908-12
Remarks																	
Units		ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
VOLATILE COMPOUNDS	Quant. Limit					Analyzed Twice	Analyzed Twice	Analyzed Twice									
Chloromethane	10			UL		- / UL		- / UL									
Bromomethane	10			UL		- / UL		- / UL									
Vinyl Chloride	10			UL		- / UL		- / UL									
Chloroethane	10			UL		- / UL		- / UL									46
Methylene Chloride	5		23 U	12 U	6 U	- / 20 U	- / 19 U	5 U/ 5 U	5 U	50 U	6 U	5 U	7 U	5 U			5 U
Acetone	10			UL		- / UL		- / UL									
Carbon Disulfide	5			UL		- / UL		- / UL									
1,1-Dichloroethene	5			UL		- / UL		- / UL									
1,1-Dichloroethane	5			UL		- / UL		- / UL		28 J							
Total 1,2-Dichloroethene	5			3 J		- / UL		- / UL									2 J
Chloroform	5			UL		- / UL		- / UL		14 J							
1,2-Dichloroethane	5			UL		- / UL		- / UL									
2-Butanone	10	R	R	R	R	R/ R	R/ R	R/ R	R	R	R	R	R	R	R	R	R
1,1,1-Trichloroethane	5			UL		- / UL		- / UL									
Carbon Tetrachloride	5			UL		- / UL		- / UL									
Vinyl Acetate	10			UL		- / UL		- / UL									
Bromodichloromethane	5			UL		- / UL		- / UL									
1,1,2,2-Tetrachloroethane	5			UL		- / UL		- / UL									
1,2-Dichloropropane	5			UL		- / UL		- / UL									
trans-1,3-Dichloropropene	5			UL		- / UL		- / UL									
Trichloroethene	5			UL		- / UL		- / 2 J									
Dibromochloromethane	5			UL		- / UL		- / UL									
1,1,2-Trichloroethane	5			UL		- / UL		- / UL									
Benzene	5			UL		- / UL		UL/ UL		UL		UL	UL				UL

VOLATILE ORGANIC ANALYSIS - ANALYTICAL RESULTS

ERM-North Central Sample Number \0-	1MW01S-GW	1MW01D-GW	1MW02S-GW	1MW02D-GW	1MW03S-GW	1MW03D-GW	1MW04S-GW	1MW04D-GW	1MW05S-GW	1MW05D-GW	1MW06S-GW	1MW06D-GW	1MW07S-GW	1MW07D-GW	161011L-GW	16106DR-MS/MSD
Laboratory Sample Number	111897-7	111897-6	111918-3	111908-6	111897-8	111897-9	111918-6	111908-1	111908-7	111908-10	111918-5	111918-1	111908-5	111908-4	111897-5	111908-12
Remarks																
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
VOLATILE COMPOUNDS (Quant. Limit)					Analyzed Twice	Analyzed Twice	Analyzed Twice									
cis-1,3-Dichloropropene (5)			UL		- / UL		- / UL									
Bromoform (5)			UL		- / UL		- / UL									
2-Hexanone (10)			UL		- / UL		- / UL									
4-Methyl-2-Pentanone (10)			UL		- / UL		- / UL									
Tetrachloroethene (5)			UL		- / UL		- / UL									
Toluene (5)	6 U		UL		5 U/ UL	5 U/ -	UL/ UL		UL		UL	UL				UL
Chlorobenzene (5)			UL		- / UL		UL/ UL		UL		UL	UL				UL
Ethylbenzene (5)			UL		- / UL		UL/ UL		270 J		UL	UL				UL
Styrene (5)			UL		- / UL		UL/ UL		UL		UL	UL				UL
Total Xylenes (5)			UL		- / UL	13 U/ -	UL/ UL		670 J		UL	UL				UL
Quantitation Limit Multiplier	1.00	1.00	1.00	1.00	1.00/ 1.00	1.00/ 1.00	1.00/ 1.00	1.00	10.0	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Date of Sample Collection	5/6/91	5/6/91	5/8/92	5/7/91	5/6/91	5/6/91	5/8/91	5/7/91	5/7/91	5/7/91	5/8/91	5/8/91	5/7/91	5/7/91	5/6/91	5/7/91
Date Sample Received by Laboratory	5/7/91	5/7/91	5/9/91	5/8/91	5/7/91	5/7/91	5/9/91	5/8/91	5/8/91	5/8/91	5/9/91	5/9/91	5/8/91	5/8/91	5/7/91	5/8/91
Date of Sample Analysis	5/12/91	5/13/91	5/22/91	5/14/91	5/12 & 5/13	5/12/& 5/13	5/22 & 5/28	5/14/91	5/17/91	5/14/91	5/22/91	5/22/91	5/14/91	5/14/91	5/12/91	5/17/91
Instrument Used for Analysis NS-	HP-2	HP-2	HP-2	HP-4	HP-2/ HP-2	HP-2/ HP-2	HP-2/ HP-2	HP-4	HP-4	HP-4	HP-4	HP-4	HP-4	HP-4	HP-2	HP-4

NOTES:

- Compound was not detected.
- U This compound should be considered "not detected" since it was detected in a blank at a similar level.
- R Unreliable result - Compound may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
- UL This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.

EXTRACTABLE ORGANIC ANALYSIS - ANALYTICAL RESULTS

ERM-North Central Sample Number	LO-	1MW01S-GW	1MW01D-GW	1MW02S-GW	1MW02D-GW	1MW03S-GW	1MW03D-GW	1MW04S-GW	1MW04D-GW	1MW05S-GW	1MW05D-GW	1MW06S-GW	1MW06D-GW	1MW07S-GW	1MW07D-GW	16101L-GW	16106DR-MS/MSD
Laboratory Sample Number		111897-7	111897-6	111918-3	111908-6	111897-8	111897-9	111918-6	111908-1	111908-7	111908-10	111918-5	111918-1	111908-5	111908-4	111897-5	111908-12
Remarks																	
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
SEMIVOLATILE COMPOUNDS	Quant. Limit			Analyzed Twice						Analyzed Twice			Analyzed Twice			Analyzed Twice	
Phenol	10									R/ R			R/ R				
bis(2-Chloroethyl)ether	10									-/ R						UL/ UL	
2-Chlorophenol	10									R/ R			R/ R				
1,3-Dichlorobenzene	10									-/ R						UL/ UL	
1,4-Dichlorobenzene	10									-/ R						UL/ UL	
Benzyl Alcohol	10									-/ R						UL/ UL	
1,2-Dichlorobenzene	10									-/ R						UL/ UL	
2-Methylphenol	10									R/ R			R/ R				
bis(2-Chloroisopropyl)ether	10									-/ R						UL/ UL	
4-Methylphenol	10									R/ R			R/ R				
N-Nitroso-di-n-Propylamine	10									-/ R						UL/ UL	
Hexachloroethane	10									-/ R						UL/ UL	
Nitrobenzene	10									UL/ R						UL/ UL	
Isophorone	10									UL/ R						UL/ UL	
2-Nitrophenol	10									R/ R			R/ R				
2,4-Dimethylphenol	10							2 J		R/ R			R/ R				
Benzoic Acid	50									UL/ R						UL/ UL	
bis(2-Chloroethoxy)methane	10									UL/ R						UL/ UL	
2,4-Dichlorophenol	10									R/ R			R/ R				
1,2,4-Trichlorobenzene	10									UL/ R						UL/ UL	
Naphthalene	10									1300 J/ 1100 J						UL/ UL	
4-Chloroaniline	10									UL/ R						UL/ UL	
Hexachlorobutadiene	10									UL/ R						UL/ UL	
4-Chloro-3-Methylphenol	10									R/ R			R/ R				
2-Methylnaphthalene	10									3200 J/ 1900 J	2 J					UL/ UL	

EXTRACTABLE ORGANIC ANALYSIS - ANALYTICAL RESULTS

ERM-North Central Sample Number	LO-	1RW01S-GW	1RW01D-GW	1RW02S-GW	1RW02D-GW	1RW03S-GW	1RW03D-GW	1RW04S-GW	1RW04D-GW	1RW05S-GW	1RW05D-GW	1RW06S-GW	1RW06D-GW	1RW07S-GW	1RW07D-GW	161811-GW	16186DR-MS/MSD
Laboratory Sample Number		111897-7	111897-6	111918-3	111908-6	111897-8	111897-9	111918-6	111908-1	111908-7	111908-10	111918-5	111918-1	111908-5	111908-4	111897-5	111908-12
Remarks																	
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
SEMIVOLATILE COMPOUNDS	Quant. limit			Analyzed Twice						Analyzed Twice			Analyzed Twice			Analyzed Twice	
Hexachlorocyclopentadiene	10									UL/ R						UL/ UL	
2,4,6-Trichlorophenol	10									R/ R			R/ R				
2,4,5-Trichlorophenol	50									R/ R			R/ R				
2-Chloronaphthalene	10									UL/ R						UL/ UL	
2-Nitroaniline	50									UL/ R						UL/ UL	
Dimethylphthalate	10									UL/ R						UL/ UL	
Acenaphthylene	10									UL/ R						UL/ UL	
3-Nitroaniline	50									UL/ R						UL/ UL	
Acenaphthene	10									UL/ R						UL/ UL	
2,4-Dinitrophenol	50									R/ R			R/ R				
4-Nitrophenol	50									R/ R			R/ R				
Dibenzofuran	10									410 J/ 340 J						UL/ UL	
2,4-Dinitrotoluene	10									UL/ R						UL/ UL	
2,6-Dinitrotoluene	10									UL/ R						UL/ UL	
Diethylphthalate	10									UL/ R						UL/ UL	
4-Chlorophenylphenylether	10									UL/ R						UL/ UL	
Fluorene	10									710 J/ 580 J						UL/ UL	
4-Nitroaniline	50									UL/ R						UL/ UL	
4,6-Dinitro-2-Methylphenol	50									R/ R			R/ R				
N-Nitrosodiphenylamine	10									UL/ R						UL/ UL	
4-Bromophenylphenylether	10									UL/ R						UL/ UL	
Hexachlorobenzene	10									UL/ R						UL/ UL	
Pentachlorophenol	50									R/ R			R/ R				
Phenanthrene	10									1800 J/ 2300 J						UL/ UL	

EXTRACTABLE ORGANIC ANALYSIS - ANALYTICAL RESULTS

ERM-North Central Sample Number	LO-	1MW01S-GW	1MW01D-GW	1MW02S-GW	1MW02D-GW	1MW03S-GW	1MW03D-GW	1MW04S-GW	1MW04D-GW	1MW05S-GW	1MW05D-GW	1MW06S-GW	1MW06D-GW	1MW07S-GW	1MW07D-GW	161811-GW	161860R-MS/MSD
Laboratory Sample Number		111897-7	111897-6	111918-3	111908-6	111897-8	111897-9	111918-6	111908-1	111908-7	111908-10	111918-5	111918-1	111908-5	111908-4	111897-5	111908-12
Remarks																	
Units		ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
SEMIVOLATILE COMPOUNDS	Quant. Limit			Analyzed Twice						Analyzed Twice			Analyzed Twice			Analyzed Twice	
Anthracene	10									79 J/ 120 J						UL/ UL	
Di-n-Butylphthalate	10									UL/ R						UL/ UL	
Fluoranthene	10									UL/ R						UL/ UL	
Pyrene	10			UL/ -						110 J/ 59 J						UL/ UL	
Butylbenzylphthalate	10			10 U/ -						UL/ R				5 U		UL/ UL	
3,3'-Dichlorobenzidine	20			UL/ -						UL/ R						UL/ UL	
Benzo(a)anthracene	10			UL/ -						UL/ R						UL/ UL	
bis(2-Ethylhexyl)phthalate	10			2 J/ -						290 J/ 380 J						UL/ UL	
Chrysene	10			UL/ -						UL/ R						UL/ UL	
Di-n-Octylphthalate	10			-/ UL						UL/ R						UL/ UL	
Benzo(b)fluoranthene	10			-/ UL						UL/ R						UL/ UL	
Benzo(k)fluoranthene	10			-/ UL						UL/ R						UL/ UL	
Benzo(a)pyrene	10			-/ UL						UL/ R						UL/ UL	
Indeno(1,2,3-cd)pyrene	10			-/ UL						UL/ R						UL/ UL	
Dibenz(a,h)anthracene	10			-/ UL						UL/ R						UL/ UL	
Benzo(g,h,i)perylene	10			-/ UL						UL/ R						UL/ UL	
Quantitation Limit Multiplier		1.00	1.00	1.00/ 1.00	1.00	1.00	1.00	1.00	1.00	10.0 / 10.0	1.00	1.00	1.00/ 1.00	1.00	1.00	1.00/ 1.00	1.00
Date of Sample Collection		5/6/91	5/6/91	5/8/91	5/7/91	5/6/91	5/6/91	5/8/91	5/7/91	5/7/91	5/7/91	5/8/91	5/8/91	5/7/91	5/7/91	5/6/91	5/7/91
Date Sample Received by Laboratory		5/7/91	5/7/91	5/9/91	5/8/91	5/7/91	5/7/91	5/9/91	5/8/91	5/8/91	5/8/91	5/9/91	5/9/91	5/8/91	5/8/91	5/7/91	5/8/91
Date Sample Extracted		5/10/91	5/10/91	5/14/91	5/10/91	5/10/91	5/10/91	5/14/91	5/10/91	5/10/91	5/10/91	5/14/91	5/14/91	5/10/91	5/10/91	5/10/91	5/10/91
Date of Sample Analysis		5/22/91	5/22/91	5/30 & 6/6	6/4/91	5/22/91	5/22/91	5/31/91	5/23/91	5/27 & 5/30	5/23/91	5/31/91	5/31 & 6/5	5/23/91	5/23/91	5/22 & 5/23	5/24/91
Instrument Used for Analysis	GCMS-	HP-1	HP-1	HP-1/ HP-1	HP-1	HP-1	HP-1	HP-1	HP-1	HP-1 / HP-1	HP-1	HP-1	HP-1/ HP-1	HP-1	HP-1	HP-1/ HP-1	HP-1

APPENDIX P

APPENDIX P

QUALITY ASSURANCE REVIEW OF THE PHASE II GROUND WATER AND NAPL RESULTS

Environmental Standards, Inc.
Specialists in Environmental Risk Assessment and Data Validation

The Commons at Valley Forge, Unit 4, 1220 Valley Forge Rd
P.O. Box 911, Valley Forge, PA 19481 215-935-5577

QUALITY ASSURANCE REVIEW

OF THE LENZ OIL SITE

May 6, 1992

Revised July 8, 1992

Prepared for:

ERM-NORTH CENTRAL, INC.
102 Wilmot Road
Suite 300
Deerfield, IL 60015

Prepared by:

ENVIRONMENTAL STANDARDS, INC.
1220 Valley Forge Road
P.O. Box 911
Valley Forge, PA 19481

TABLE OF CONTENTS

Introduction

This quality assurance review is based upon a review of all data generated from the samples which were collected from February 17-19, 1992 as part of the Lenz Oil RI/FS. The samples that have undergone a rigorous quality assurance review are listed on Table 1.

This review has been performed with guidance from the "Functional Guidelines for Evaluating Organics Analyses" (U.S. EPA, 1988 and 1990 as applicable) and the "Functional Guidelines for Evaluating Inorganics Analyses" (U.S. EPA, 1988).

The reported analytical results are presented as a summary of the data in Section 2. Data were examined to determine the usability of the analytical results and also to determine contractual compliance relative to analytical requirements and data package deliverables specified in the EPA's Contract Laboratory Program (CLP) protocols. Qualifier codes have been placed next to results so that the data user can quickly assess the qualitative and/or quantitative reliability of any result. Details of this quality assurance review are presented in the narrative section of this report. This report was prepared to provide a critical review of the laboratory analyses and reported chemical results. Rigorous quality assurance reviews of laboratory-generated data routinely identify various problems associated with analytical measurements, even from the most experienced and capable laboratories. The nature and extent of problems identified in this critical review should not be interpreted to mean that those results that do not have qualifier codes are less than valid.

TABLE 1

SAMPLES THAT HAVE UNDERGONE A RIGOROUS QUALITY ASSURANCE REVIEW

ERM-North Central Sample Number	Laboratory Sample Number(s)	Group Code	Date of Sample Collection	Analyses Performed
LO-2TB-1 (Trip Blank)	200256-1	MW	2/17/92	V
LO-201S-FB (Field Blank)	200256-2 021000-0008 02125-01S 02127-01S	MW	2/17/92	V, S, P, M, CN
LO-201S-GW	200256-3 021000-0007 02125-02S 02127-02S	MW	2/17/92	V, S, P, M, CN
LO-201D-GW	200256-4 021000-0009 02125-03S 02127-03S	MW	2/17/92	V, S, P, M, CN
LO-204S-GW	200256-5 021000-0001 02125-04S 02127-04S	MW	2/17/92	V, S, P, M, CN
LO-204S-GWDUP (Duplicate of LO-204S-GW)	200256-6 021000-0002 02125-05S 02127-05S	MW	2/17/92	V, S, P, M, CN
LO-202S-GW	200256-7 021000-0004 02125-07S 02127-07S	MW	2/17/92	V, S, P, M, CN
LO-204D-GW	200256-8 021000-0004 02125-06S 02127-06S	MW	2/17/92	V, S, P, M, CN
LO-205D-GW	200256-9 021000-0005 02125-08S 02127-08S	MW	2/17/92	V, S, P, M, CN

TABLE 1 (Cont.)

ERM-North Central Sample Number	Laboratory Sample Number(s)	Group Code	Date of Sample Collection	Analyses Performed
LO-202D-GW	200256-10 021000-0006 02125-09S 02127-09S	MW	2/17/92	V, S, P, M, CN
LO-2-TB2 (Trip Blank)	200257-1	MW	2/18/92	V
LO-208S-FB (Field Blank)	200257-2 021008-0011 02125-10S 02127-10S	MW	2/18/92	V, S, P, M, CN
LO-208S-GW	200257-3 021008-0012 02125-11S 02127-11S	MW	2/18/92	V, S, P, M, CN
LO-208S-GWDUP (Duplicate of LO-208S-GW)	200257-4 021008-0013 02125-12S 02127-12S	MW	2/18/92	V, S, P, M, CN
LO-2106DR-GW	200257-5 021008-0014 02125-13S 02127-13S	MW	2/18/92	V, S, P, M, CN
LO-2101L-GW	200257-6 021008-0005 02125-14S 02127-14S	MW	2/18/92	V, S, P, M, CN
LO-2101M-GW	200257-7 021008-0006 02125-15S 02127-15S	MW	2/18/92	V, S, P, M, CN
LO-2101D-GW	200257-8 021008-0007 02125-16S 02127-16S	MW	2/18/92	V, S, P, M, CN
LO-2102L-GW	200257-9 021008-0008 02125-17S 02127-17S	MW	2/18/92	V, S, P, M, CN

TABLE 1 (Cont.)

ERM-North Central Sample Number	Laboratory Sample Number(s)	Group Code	Date of Sample Collection	Analyses Performed
LO-207D-GW	200257-10 021008-0009 02125-18S 02127-18S	MW	2/18/92	V, S, P, M, CN
LO-207S-GW	200257-11 021008-0010 02125-19S 02127-19S	MW	2/18/92	V, S, P, M, CN
LO-2102D-GW	200257-12 021008-0001 02125-20S 02127-20S	MW	2/18/92	V, S, P, M, CN
LO-205S-GW	200257-13 021008-0002 02126-01S 02128-01S	MW	2/18/92	V, S, P, M, CN
LO-206S-GW	200257-14 021008-0003 02126-02S 02128-02S	MW	2/18/92	V, S, P, M, CN
LO-206D-GW	200257-15 021008-0004 02126-03S 02128-03S	MW	2/18/92	V, S, P, M, CN
LO-203S-FB (Field Blank)	200258-1 021047-0001 02126-04S 02128-04S	MW	2/19/92	S, P, M, CN
LO-2106S-GW	200258-2 021047-0002 02126-05S 02128-05S	MW	2/19/92	S, P, M, CN
LO-203S-GW	200258-3 021047-0003 02126-06S 02128-06S	MW	2/19/92	V, S, P, M, CN
LO-203S-GWDUP (Duplicate of LO-203S-GW)	200258-4 021047-0004 02126-07S 02128-07S	MW	2/19/92	S, P, M, CN

TABLE 1 (Cont.)

ERM-North Central Sample Number	Laboratory Sample Number(s)	Group Code	Date of Sample Collection	Analyses Performed
LO-203D-GW	200258-5 21047-0005 02126-08S 02128-08S	MW	2/19/92	S, P, M, CN
LO-2-TB4	200258-6	MW	2/19/92	V
LO-2-TBS	480663	RW	2/18/92	V, S, P
LO-2-RES1-FB (Field Blank)	480668 4151-003	RW	2/18/92	V, S, P, M*, CN
LO-2-RES1-RW	480665 4151-001	RW	2/18/92	V, S, P, M*, CN
LO-2-RES1-RWDUP (Duplicate of LO-2-RES1-RW)	480669 4151-002	RW	2/18/92	V, S, P, M*, CN
LO-205S-WO (LO-205S-DN)	21012-01 2105901	NAPL	2/18/92	V, S, P, M**, CN
LO-2106S-WO (LO-2106S-DN)	21046-01 2105401	NAPL	2/19/92	V, S, P, M**, CN
LO-205S-DNT	21012-01T	TCLP	2/18/92	V, S, P
LO-2106S-DNT	21046-01T	TCLP	2/19/92	V, S, P

Notes:

V	TCL Volatile Organics Compounds
S	TCL Semivolatile Organics Compounds
P	TCL Pesticides and Aroclors Organic Compounds
M*	Total Metals Only
M	Total and Dissolved Metals
M**	Total Metals Using TCLP Preparation
CN	Total Cyanide
MW	Monitoring Wells
RW	Residential Wells
NAPL	Non-Aqueous Phase Liquid

Section 1 Quality Assurance Review

A. Organic Data

The organic analysis of 31 aqueous samples monitoring well samples, 4 aqueous residential well samples and 2, Non-Aqueous Phase Liquids (NAPL) samples was performed by three different laboratories. Applied Research and Development Laboratories, Inc. (ARDL) of Mt. Vernon, Illinois analyzed the monitoring wells for volatile organics. CompuChem Laboratories, Inc. (CLI) of Research Triangle Park, North Carolina analyzed the residential wells for semivolatile, pesticide and Aroclor organic compounds and Enseco-Rocky Mountain Analytical Laboratory (RMAL) of Arvada, Colorado analyzed the monitoring well samples for semivolatile, pesticide and Aroclor organic compounds. RMAL also analyzed the NAPL samples. This data set was provided in several separate data packages and the samples are listed on Table 1. The samples were analyzed by CLP protocols (SOW390, Document OLM01.8) collectively for the Target Compound List (TCL) volatile organic compounds, the TCL base/neutral/acid extractable compounds and the TCL pesticides/Aroclors. Two NAPL samples were also analyzed for TCLP organic compounds. In addition, mass spectral library searches were performed on up to 30 extraneous chromatographic peaks for the volatile and semivolatile GC/MS analyses combined. The findings offered in this report are based upon a rigorous review of holding times, blank analysis results, surrogate and matrix spike recoveries, analytical sequence, GC/MS tuning, system performance, target compound matching quality, calibrations, internal standard areas, quantitation of positive results and Tentatively Identified Compounds (TICs). The analytical results are provided in Section 2.

Overall, the organic data quality was good; however, a portion of the data was qualified or rejected. Contractual criteria and reporting requirements were met for the data package with the exception of the following. The following issues are based on a number of laboratory resubmissions received and reviewed. These resubmittals are to be considered an integral part of the laboratory data packages. It should be emphasized that the following items are contractual in nature and do not necessarily affect data usability. Usability is addressed separately.

Noncorrectable Deficiency - ARDL- Monitoring Wells

- The reanalyses and diluted volatile analyses for samples LO-205S-GW and LO-2106S-GW exceeded the CLP holding times (10 days from VTSR) and the holding time specified in the Lenz Oil "RI/FS Sampling and Analysis Plan" (page T-8) for samples preserved with HCl (14 days from sample collection). The data has been qualified accordingly.

Noncorrectable Deficiencies - Enseco-RMAL- Monitoring Wells

1. The semivolatile extraction of sample LO-204S-GWDUP was performed 24 days beyond the 5-day holding time from the date of sample receipt.

2. A matrix spike/matrix spike duplicate analysis for semivolatile or pesticide/Aroclor organic compounds was not performed on any of the aqueous samples in SDG 20147.

3. The reported result of bis(2-ethylhexyl)phthalate in the matrix spike and of pentachlorophenol in the matrix spike duplicate analyses of sample LO-2106DR-GW exceeded the calibration range of the instrument. Per CLP protocol, these samples should have been diluted and reanalyzed (SOW OLM01.8, E-26).

4. A non-pesticide contaminant which eluted close to *alpha*-BHC was present in all of the chromatograms for samples, blanks, and standards provided with the data for SDG 21000 and SDG 21008. The interferant caused standards to be out of specifications and blanks to be contaminated (not >50% CRDL). The laboratory should have taken corrective action before commencing pesticide/Aroclor analysis of these samples.

5. Although the contaminant mentioned above was not confirmed as *alpha*-BHC on the RTX35 column, in three instrument blanks in SDGs 21000 and 21008 the concentration found for the pesticide on the RTX5 column was above the CRDL. *Alpha*-BHC exceeded the RSD criterion (30%) for the following initial calibration standards and was outside the relative percent difference (RPD) criterion (±25%) for the following PEM and INDAM continuing calibration standards. The acceptance criteria for standards, performance evaluation mixture analyses and blanks must be met for both columns as specified in CLP protocol (SOW OLM01.8, D-35/PEST). Because both sets of initial calibration standards failed acceptance criteria (as specified below), all samples in this data set should have been reanalyzed.

Standard	Date and Time	SDG	RSD or RPD	Column
Initial Calibration	3/04/92 - 3/04/92	21000 and 21008	32.2	RTX5
Initial Calibration	3/12/92 -3/12/92	21047	32.0	RTX35
Initial Calibration	3/12/92 - 3/12/92	21047	26.3	RTX5
PEM	3/6/92 02:11	21000 and 21008	40.0	RTX35
PEM	3/6/92 21:41	21000 and 21008	46.2	RTX35
PEM	3/6/92 21:41	21000 and 21008	26.1	RTX5
PEM	3/11/92 19:18	21047	26.1	RTX5

Standard	Date and Time	SDG	RSD or RPD	Column
PEM	3/12/92 7:26	21047	26.1	RTX5
Cont. Cal. INDA	3/6/92 12:43	21000 and 21008	54.6	RTX35
Cont. Cal. INDA	3/12/92 18:46	21047	51.8	RTX35

6. The RPDs for 4,4'-DDT and tetrachloro-*m*-xylene were greater than 25% for the PEM analyzed on 3/11/92 at 19:18 on the RTX35 column and the INDBM standard analyzed on 3/12/92 at 18:46 on the RTX5 column, respectively. Since the first PEM failed to meet acceptance criteria, all samples in SDG 21047 should have been reanalyzed.

7. The laboratory analyzed all the samples in SDG 21008 and 21047 under an unacceptable florisil cartridge check. These samples should have been reanalyzed.

8. In accordance with CLP protocol (SOW OLM01.8, D-56/SV) the laboratory must reanalyze a method blank whose semivolatile analysis does not produce acceptable recoveries for all the surrogates in the blank. If surrogate recoveries are unacceptable in the reanalysis, all samples associated with the blank must be re-extracted and reanalyzed along with a new blank. A low recovery for the surrogate compound, 2-fluorobiphenyl was observed for the method blank (SBLK01 BL022192) associated with all the semivolatile samples in SDG 21000 except LO-204S-GWDUP.

9. Based on the levels of Aroclors reported in samples LO-205S-GW and LO-2106S-GW, it appears that a GC/MS confirmation should have been attempted. SOW OLM01.8 (D-61/PEST) specifies that "Any pesticide/Aroclor confirmed on two dissimilar GC columns must also be confirmed by GC/MS if the concentration in the final extract is sufficient for GC/MS analysis (based on the laboratory GC/MS detection limits)." Although it may be possible that the laboratory's GC/MS detection limits are above the concentrations reported in the aforementioned samples, it appears that the concentrations are sufficient for such a GC/MS confirmation.

Noncorrectable Deficiencies - Enseco-RMAL - NAPL Samples

1. The percent differences between the calculated amount in the continuing calibration standards and the nominal amount were outside acceptable criteria (>25%) for the following analytes. All analytes exhibited higher instrument sensitivity, so the data quality was not affected; however, the laboratory is required (CLP protocol OLM01.8 D-47/PEST) to reanalyze samples that are not bracketed with acceptable standards.

Standard	Date and Time	SDG	RSD or RPD	Column
PEM	3/12/92 23:41	21012 and 21046	26.1	RTX35
PEM	3/13/92 18:33	21012 and 21046	40.0	RTX35
PEM	3/12/92 11:21	21012 and 21046	26.1	RTX5
PEM	3/12/92 23:41	21012 and 21046	26.1	RTX5

2. The laboratory analyzed all the samples in SDG 21012 and 21046 under an unacceptable florisil cartridge check. These samples should have been reanalyzed.

3. Based on the levels of Aroclors reported in samples LO-205S-DN and LO-2106S-DN, it appears that a GC/MS confirmation should have been attempted. SOW OLM01.8 (D-61/PEST) specifies that "Any pesticide/PCB confirmed on two dissimilar GC columns must also be confirmed by GC/MS if the concentration in the final extract is sufficient for GC/MS analysis (based on the laboratory GC/MS detection limits)." Although it may be possible that the laboratory's GC/MS detection limits are above the concentrations reported in the aforementioned samples, it appears that the concentrations are sufficient for such a GC/MS confirmation.

Noncorrectable Deficiencies - Enseco-RMAL - NAPL TCLP Samples

1. According to CLP protocol (OLM01.8D-40/SV), the percent relative abundance (%RA) for mass ion (m/z) 441 must be present, but less than mass ion 443. The laboratory reported two noncompliant DFTPP tunes. One was analyzed on 3/17/92 at 15:13, on instrument 4500-R and was associated with sample LO-2106S-DNT in SDG 21046-T and the method blank in SDG 21012-T, and the other was analyzed on 3/18/92 at 9:12 and was associated with a method blank in SDG 21046-T. The %RAs for m/z 441 were 13.4 and 10.7, and the %RAs for 443 were 12.1 and 10.5. Since the samples were free of target analytes, the data quality does not appear to have been affected. Copies of the DFTPP tunes have been included in the support documentation.

2. The target analyte, pyridine, was not present on the Form VIs and VIIs and the quantitation reports for the semivolatile initial and continuing calibration standards associated with the NAPL TCLP samples (SDGs 21012-T and 21046-T). The data reviewer found a separate pyridine quantitation report for one continuing calibration standard analyzed on 3/17/92 at 15:26, but for no other calibrations.

3. The percent differences between the calculated amount in the continuing calibration standards and the nominal amount were outside acceptable criteria (>25%) for the

following analytes. All analytes exhibited higher instrument sensitivity, so the data quality was not affected; however, the laboratory is required (CLP protocol OLM01.8, D-47/PEST) to reanalyze samples that are not bracketed with acceptable standards.

Standard	Date and Time	SDG	RSD or RPD	Column
PEM	3/12/92 23:41	21012-T and 21046-T	26.1	RTX35
PEM	3/13/92 18:33	21012-T and 21046-T	40.0	RTX35
PEM	3/12/92 11:21	21012-T and 21046-T	26.1	RTX5
PEM	3/12/92 23:41	21012-T and 21046-T	26.1	RTX5

4. The laboratory analyzed all the samples in SDG 21012 and 21046 under an unacceptable florisil cartridge check.

5. The laboratory analyzed all the samples in SDG 21012-T and 21046-T under an unacceptable GPC calibration.

6. Based on the levels of Aroclors reported in samples LO-205S-DNT and LO-2106S-DNT, it appears that a GC/MS confirmation should have been attempted. SOW OLM01.8 (D-61/PEST) specifies that "Any pesticide/Aroclor confirmed on two dissimilar GC columns must also be confirmed by GC/MS if the concentration in the final extract is sufficient for GC/MS analysis (based on the laboratory GC/MS detection limits)." Although it may be possible that the laboratory's GC/MS detection limits are above the concentrations reported in the aforementioned samples, it appears that the concentrations are sufficient for such a GC/MS confirmation.

7. According to CLP protocol (SOW OLM01.8 D-52 to 53/SV), samples that do not meet the internal standard area criterion ($\pm 50\%$) of the internal standards area in the continuing calibration standard) must be reanalyzed after taking appropriate corrective action. The area for the internal standard naphthalene-d_8 in sample LO-2106S-DNT was low, and apparently, the laboratory did not reanalyze the sample.

Comments - ARDL - Monitoring Wells

1. The Chain-of-Custody indicated that air bubbles were present in 1 of 3 volatile vials of samples LO-201S-GW, LO-201D-GW, LO-202S-GW, LO-205D-GW and LO-2102L-GW and in 2 of 3 volatile vials of sample LO-2101M-GW. The data reviewer assumed that the volatile analysis of the samples was performed on an aliquot of sample from the vial without air bubbles present.

2. The Chain-of-Custody accompanying the monitoring well (MW) samples in Case 200256 had a few obliterations which were not dated and initialed. Errors should be corrected with a single line only.

3. The data summary package was missing from the data package for the MW samples in Case 200258. The laboratory has indicated that a data summary package was not submitted as the data package consisted of one volume.

4. The laboratory flagged target compounds found in the method blanks in this data set "B" on the applicable laboratory method blank Form I's. The CLP requires a "B" flag to be used on the sample Form I not on the method blank Form I, for compounds found in the sample and also in the associated method blank (SOW OLM01.8, B-33).

Comments - Enseco-RMAL - Monitoring Wells

1. The laboratory reported numerous positive identifications for the semivolatile tentatively identified compounds (TICs) found in the samples. Although the fits were fairly good for some of these TICs, the purities were much lower, and the second or third choice might have looked just as good. The data reviewer has taken a more conservative approach and assigned more generic identifications to the TICs. Modified Form I-TICs are included in the support documentation.

2. A semivolatile analysis was not performed on sample LO-2101L-GW and has been flagged "NA" on the data tables. Although a sample aliquot was submitted for analysis, the sample extract was inadvertently lost during processing.

3. The laboratory used laboratory sample numbers instead of ERM-NC sample numbers on the QA/QC summary forms and Form I's.

4. The laboratory scrambled the order of Form VIIs in the data package, placing a page from one standard with a page and the raw data for another.

5. The laboratory reported positive results for *N*-nitroso-di-*n*-propylamine in samples LO-204S-GW and LO-204S-GWDUP based on mass spectra that do not meet all of the criteria necessary for identification per the CLP protocol (SOW OLM01.8, D50-51/SV).

6. The laboratory did not provide pesticides/Aroclor chromatograms in the format as required by CLP protocol (SOW OLM01.8, D-50-52/PEST) for the blanks, samples, quality control samples and some standards. The chromatograms displayed numerous peaks, including peaks for the surrogates that were not fully on-scale. All peaks must be less than full scale unless specifically exempted, as specified in the protocol.

7. Due to improper presentation of the pesticide standard chromatograms, it was not possible for the data reviewer to verify whether the resolution criteria for Resolution Check, PEMs, INDA and INDB initial and continuing calibration standards were met in all cases in this data set.

8. In accordance with the CLP protocol (SOW OLM01.8), all pesticide/Aroclor analytes that have peaks within the retention time windows set for both columns must be reported as the lowest concentration found. Concentrations reported below the CRQL are flagged "J" and analytes with percent differences between the two columns which are greater than 25% are flagged "P" on the Form I for the sample. For many samples in this data set, chromatographic peaks were present in the retention time windows for both columns, yet, the analyte was reported as "not detected" on the Form I. In all cases, however, the lower of the two concentrations was below CRQL.

9. For samples LO-205S-GW and LO-2106S-GW, the laboratory flagged the results for Aroclors 1242 and 1260 "P" on the Form I's. Since in all cases the percent differences calculated between results obtained on both columns were less than or equal to 25%, the "P" flag is inappropriate, as described in the CLP protocol (SOW OLM01.8, B-34).

10. The laboratory did not follow the required scheme (SOW OLM01.8, B-29) for entering identifiers for pesticide standards and blanks associated with this data set. Non-unique identification numbers were used for PEMs, INDAM and INDBM initial and continuing calibration standards and for PIBLKs.

Comments - CompuChem Laboratories, Inc. - Residential Wells

1. The laboratory did not provide a quantitation report for the quantitation of the tentatively identified compounds found in the residential well samples. Consequently, the data reviewer could not reproduce the reported concentrations.

2. The bottoms of many pages were cut-off by the copier, and the page number could not be read.

Comments - Enseco-RMAL - NAPL Samples

1. As noted in the narrative associated with SDG 21046, due to a laboratory error, the VOA analysis holding times were exceeded for the MS/MSD.

2. The data reviewer has opted to use the laboratory-altered client sample numbers of LO-205S-DN and LO-2106S-DN for ERM-North Central samples LO-205S-WO and LO-2106S-WO, respectively. Furthermore, the reviewer has added a "T" suffix to the

sample numbers to designate the NAPL samples that underwent TCLP preparation in addition to normal preparation for the analyses.

3. The laboratory used laboratory sample numbers instead of ERM-NC sample numbers on the QA/QC summary forms and Form I's.

4. The response factors (RRF50) for 2-butanone and toluene were missing from the Form VII VOA for the continuing calibration standard analyzed on 3/5/92 at 9:10 on instrument 4500-Z. The data reviewer calculated the response factors from the areas provided on the quantitation report for the standard and determined percent differences of 77.2% and 5.5%, respectively.

5. For samples LO-205S-DN and LO-2106S-DN, the laboratory flagged the result for Aroclors 1242 and 1260 "P" on the Form I's. Since in all cases the percent differences between results obtained on both columns were calculated to be less than or equal to 25%, the "P" flag is inappropriate, as described in the CLP protocol (SOW OLM01.8 B-34).

6. The laboratory did not follow the required scheme (SOW OLM01.8 B-29) for entering identifiers for pesticide standards and blanks associated with this data set. Non-unique identification numbers were used for PEMs, INDAM and INDBM initial and continuing calibration standards and for PIBLKs.

7. In accordance with the CLP protocol (SOW OLM01.8), all pesticide/Aroclor analytes that have peaks within the retention time windows set for both columns must be reported as the lowest concentration found. Concentrations reported below the CRQL are flagged "J", and analytes with percent differences between the two columns that are greater than 25% are flagged "P" on the Form I for the sample. For many samples in this data set, chromatographic peaks were present in the retention time windows for both columns, yet the analyte was reported as "not detected" on the Form I. In all cases, however, the lower of the two concentrations was below the CRQL.

<u>Comments - Enseco - RMAL - NAPL TCLP Samples</u>

1. The laboratory used laboratory sample numbers instead of ERM-NC sample numbers on the QA/QC summary forms and Form I's.

2. The response factors (RRF50) for 2-butanone and toluene were missing from the Form VII VOA for the continuing calibration standard analyzed on 3/5/92 at 9:10 on instrument 4500-Z. The data reviewer calculated the response factors from the areas provided on the quantitation report for the standard on determined percent differences of 77.2% and 5.5%, respectively.

3. The laboratory did not follow the required scheme (SOW OLM01.8 B-29) for entering identifiers for pesticide standards and blanks associated with this data set. Non-unique identification numbers were used for PEMs, INDAM and INDBM initial and continuing calibration standards and for PIBLKs.

4. In accordance with the CLP protocol (SOW OLM01.8), all pesticide/Aroclor analytes that have peaks within the retention time windows set for both columns must be reported as the lowest concentration found. Concentrations reported below the CRQL are flagged "J", and analytes with percent differences between the two columns which are greater than 25% are flagged "P" on the Form I for the sample. For many samples in this data set, chromatographic peaks were present in the retention time windows for both columns, yet the analyte was reported as "not detected" on the Form I. In all cases, however, the lower of the two concentrations was below CRQL.

With regard to data usability, principal areas of concern include blank contamination, surrogate recoveries, matrix spike recoveries, target compound matching quality, holding times, internal standard areas, calibrations and sample integrity. Based upon a review of the data provided, the following data qualifiers are offered. It should be noted that the following data usability issues represent an interpretation of the quality control results obtained for the project samples. Quite often, data qualifications address issues relating to sample matrix problems. Similarly, the validation guidelines routinely specify areas of the data that require qualification, yet the methods used for analysis do not require any corrective action by the laboratory. Accordingly, the following data usability issues should not necessarily be construed as an indication of laboratory performance.

Organic Data Qualifiers

- Due to the trace-level presence of methylene chloride, 2-butanone, di-*n*-butylphthalate, bis(2-ethylhexyl)phthalate, heptachlor, methoxychlor and *gamma*-chlordane in the laboratory, field and/or trip blanks, the reported presence of these compounds in the following samples should be considered "not-detected" and the results have been flagged "U" on the sample data tables. Furthermore, results that were reported below the quantitation limit were replaced with the quantitation limit with the appropriate "U" qualifier.

Compound	Applicable Samples
methylene chloride	LO-201S-GW, LO-204D-GW, LO-202D-GW, LO-205S-DN, LO-2016DR-GW, LO-2101M-GW, LO-207S-GW, LO-2102D-GW, LO-206S-GW, LO-206D-GW, LO-2106S-GW, LO-2106S-GW-DL, LO-2106S-GW-RE, LO-203S-GW, LO-203S-GWDUP LO-203D-GW, LO-2-RES1-RWDUP and LO-2RES1-RW

Compound	Applicable Samples
2-butanone	LO-201D-GW
di-*n*-butylphthalate	LO-2106DR-GW, LO-2101M-GW, LO-207S-GW, LO-2102D-GW, LO-2-RES1-RWDUP and LO-2RES1-RW
butylbenzylphthalate	LO-2-RES1-RWDUP and LO-2RES1-RW
bis(2-ethylhexyl)phthalate	LO-201S-GW, LO-202S-GW, LO-205D-GW, LO-202D-GW, LO-208S-GW, LO-2101M-GW, LO-2102L-GW, LO-207D-GW, LO-207S-GW, LO-2102D-GW, LO-205S-GW, LO-2106S-GW, LO-203S-GWDUP, LO-203D-GW, LO-2-RES1-RWDUP and LO-2RES1-RW
heptachlor	LO-2-RES1-RWDUP
methoxychlor	LO-2-RES1-RWDUP and LO-2RES1-RW
gamma-chlordane	LO-2-RES1-RWDUP

- Although there is no direct reason to question the reported results for acetone in sample LO-205S-GW-RE, di-*n*-butylphthalate in samples LO-203S-GW and LO-203D-GW and diethylphthalate in sample LO-2106DR-GW, acetone, di-*n*-butylphthlate and diethylphthalate are extremely common laboratory and field contaminants. Accordingly, great caution should be exercised when using these results.

- The analyses for all semivolatile compounds in all NAPL TCLP samples should be considered unreliable and the results have been flagged "R" on the data tables. The semivolatile extraction of these samples was performed 6-7 days beyond the holding time of 14 days from collection.

- The actual detection limit for 2-butanone may be higher than reported in all the residential well samples and have been flagged "R" on the data tables. A very low average response factor (<0.05) was obtained for the analyte in the associated initial calibration standards.

- The actual detection limits for the following compounds may be higher than reported and have been flagged "UL" on the data tables. High percent differences ($>25\%$) with decreasing instrument sensitivity were observed for the response factors for these compounds in the associated continuing calibration standards compared to the average response factor from the associated multi-point calibrations.

Compound	Applicable Sample(s)
acetone	LO-208S-GW, LO-208S-GWDUP, LO-2101L-GW, LO-2101D-GW, and LO-205S-GW
2-butanone	All samples in Cases 200257 and 200258 except LO-205S-GW-DL, LO-203S-FB, LO-2106S-GW and LO-203S-GW
bromoform	LO-2106S-DN
4-methyl-2-pentanone	LO-208S-GW, LO-208S-GWDUP, LO-2101L-GW, LO-2101D-GW, LO-205S-GW, LO-205S-GW-DL, LO-205S-DN and LO-2106S-DN
2-hexanone	LO-201D-GW and all samples in Cases 200257 and 200258 except LO-2106S-GW, LO-205S-GWDL, LO-205S-GWRE, LO-2106S-GWDL, LO-2106S-GWRE and LO-203S-GW
vinyl chloride	LO-2106DR-GW, LO-2101M-GW, LO-207D-GW, LO-207S-GW, LO-206S-GW and LO-206D-GW
carbon disulfide	All residential well samples
chloromethane	All residential well samples
bis(2-chloroethyl)ether, 2,2′-oxybis(1-chloropropane), *N*-nitroso-di-*n*-propylamine, isophorone, bis(2-chloroethoxy)methane and 2-nitroaniline	LO-2101M-GW, LO-2101D-GW, LO-2102D-GW, LO-205S-GW, LO-206S-GW, LO-206D-GW and LO-2106S-DN
2,2′-oxybis(1-chloropropane), *N*-nitroso-di-*n*-propylamine, bis(2-chloroethoxy)methane, 2-nitroaniline and 4-chlorophenyl-phenylether	LO-205S-DN
4-methylphenol	LO-2101M-GW

SECTION 2

ANALYTICAL RESULTS

A. ORGANIC DATA

Compound	Applicable Sample(s)
4-chloroaniline	All samples in Case 21000 unless previously qualified, LO-208S-FB, LO-208S-GW, LO-208S-GWDUP, LO-2106DR-GW, LO-2102L-GW, LO-207D-GW and LO-207S-GW
3-nitroaniline	All samples in Case 21000 unless previously qualified, LO-208S-FB, LO-208S-GWDUP, LO-2102L-GW, LO-207D-GW, and LO-207S-GW
4-nitrophenol	All samples in Case 21000 unless previously qualified, LO-208S-GW and LO-2106DR-GW
4-nitroaniline	All samples in Case 21000 unless previously qualified, LO-208S-FB, LO-208S-GW, LO-208S-GWDUP, LO-2106DR-GW, LO-2102L-GW, LO-207D-GW and LO-207S-GW
carbazole	LO-2106DR-GW and LO-208S-GW
3,3'-dichlorobenzidine	LO-202S-GW, LO-208S-GW and LO-2106DR-GW

- The positive results for the following compounds should be considered estimated and have been flagged "J" on the data tables. High percent differences (>25%) were observed for the response factors for these compounds in the associated continuing calibration standards compared to the average response factor from the associated multi-point calibrations.

Compound	Applicable Sample(s)
acetone	LO-205S-GW-RE
vinyl chloride	LO-2102L-GW and LO-2102D-GW
2-butanone	LO-203S-FB

- The positive result for acetone in sample LO-205S-GW-RE should be considered estimated and has been flagged "J" on the data tables. A high relative standard deviation (RSD) was observed for the response factors in the initial multi-point calibration standards associated with the sample.

- The actual analyses for carbon disulfide in all monitoring well samples except LO-2TB-1, LO-201S-FB, LO-201S-GW, LO-204S-GW, LO-204S-GWDUP, LO-202S-GW, LO-204D-GW, LO-205D-GW, LO-202D-GW and LO-2106S-GW are unreliable and the results have been flagged "R" on the sample data tables. An extreme reduction (~90%) in the response factor between the multi-point initial calibration and the associated continuing calibration standard was observed for this analyte.

- The positive results for volatile organics in samples LO-205S-GW-RE and LO-205S-GW-DL should be considered estimated and have been flagged "J" on the data tables. These samples were analyzed for volatile organic compounds 4 and 6 days in excess of the Federal Register maximum allowable holding time for the analysis for volatile organic compounds of 14 days from collection in preserved samples.

- The positive results for volatile compounds in samples LO-205S-GW-RE, LO-205S-GW-DL, LO-2106S-G-DL and LO-2106S-GW-RE (unless previously qualified) should be considered estimated and have been flagged "J" on the data tables. Similarly, the actual detection limits for these compounds, reported as "not-detected" in these samples, are unreliable and have been flagged "R" on the data table. These reanalyses were performed 21-23 days from sample collection. The actual detection limits for volatile organics in sample LO-2106S-GW should be considered estimated and have been flagged "UL" on the data tables. In addition, the surrogate recoveries and/or internal standard area counts were outside of the acceptable ranges for the analyses of this sample. The latter reasons alone would necessitate data qualification.

- The positive results for the volatile compound ethylbenzene in sample LO-205S-GW-RE, and for ethylbenzene, benzene and total xylene in samples LO-2106S-GW and LO-2106S-GW-RE (unless previously qualified) should be considered estimated and have been flagged "J" on the data tables. These results exceeded the calibration range of the instrument.

- The analyses for semivolatile compounds reported as "not-detected" in sample LO-204S-GWDUP are unreliable have been flagged "R" on the data tables. Similarly, positive results should be considered estimated and have been flagged "J" on the data tables. This sample was extracted 29 days from the date of sample collection.

- The positive results for *N*-nitroso-di-*n*-propylamine in samples LO-204S-GW and LO-204S-GWDUP are unreliable and have been flagged "R" on the data table. For each of these samples, the corresponding mass spectrum did not meet the criteria for identification specified in the CLP protocol (SOW390 OLM01.8 D-50-51/SV).

- The actual detection limits for base/neutral compounds in sample LO-201S-GW may be higher than reported by the laboratory and have been flagged "UL" on the data tables. Low recoveries for two base/neutral surrogates were observed for this sample.

- The actual detection limits for *gamma*-BHC and 4,4'-DDT in all samples in SDG 21008 and for *alpha*-BHC in all NAPL and NAPL TCLP samples may be higher than reported by the laboratory and have been flagged "UL" on the data tables. A low percent recovery was observed for the compounds in the pesticide florisil cartridge check.

- The actual detection limits for *gamma*-BHC, heptachlor, aldrin, dieldrin, endrin and 4,4'-DDT in all NAPL TCLP samples (SDGs 21012-T and 21046-T) may be higher than reported by the laboratory and have been flagged "UL" on the data tables. Low percent recoveries were observed for the above-mentioned compounds in the pesticide GPC calibration check standards.

- The actual detection limits for pesticides/Aroclors in samples LO-206D-GW, LO-2101M-GW, LO-207S-GW, LO-208S-GWDUP and LO-2106DR-GW may be higher than reported by the laboratory and have been flagged "UL" on the data tables. Low recoveries (<60%) for the pesticide surrogates tetrachloro-*m*-xylene and/or decachlorobiphenyl were observed for these samples.

- Due to interferences in the matrix of the samples, the semivolatile and pesticide surrogate compounds were diluted to the extent that 0% recoveries were obtained in samples LO-205S-GW, LO-2106S-GW, LO-205S-DN, LO-2106S-DN, LO-205S-DNT and LO-2106S-DNT. Surrogate recoveries measure laboratory performance on a sample-specific basis. Based on these surrogate recoveries, the data reviewer was not able to evaluate the extraction efficiency for the above-mentioned analyses. Therefore, the data was not qualified based on 0% recoveries obtained for the surrogate compounds.

- The laboratory did not provide the raw data associated with the semivolatile analyses of samples LO-203S-GW, LO-203S-GWDUP and LO-203D-GW and the standards data associated with SDG 21047. The data reviewer was, therefore, not able to evaluate the data for these three samples based on standard criteria or verify the reported results.

- The actual detection limits for acenaphthene and pyrene in sample LO-201S-GW may be higher than reported by the laboratory and have been flagged "UL" on the data table. Low recoveries were obtained for the analytes in the associated matrix spike/matrix spike duplicate. Additionally, the RPDs for several analytes were outside the QC limits. Since these analytes were not detected in the field sample, the high RPDs did not affect data quality.

- The actual detection limits reported by the laboratory for pyridine in samples LO-205S-DNT and LO-2106S-DNT are unreliable and have been flagged "R" on the data tables. The target analyte, pyridine, was not present on the Form VI's and VII's or on quantitation reports for the semivolatile initial and continuing calibration standards associated with the NAPL TCLP samples (SDGs 21012-T and 21046-T).

- Three blind field duplicate pairs were submitted to the laboratory for this data set as listed below. Positive results were not detected above the quantitation limit for any volatile, semivolatile or pesticide/PCB target compounds for the field QC samples associated with the samples in this data set.

Sample	Duplicate
LO-204S-GW	LO-204S-GWDUP
LO-208S-GW	LO-208S-GWDUP
LO-203S-GW	LO-203S-GWDUP

- Per CLP protocol, all results reported below the quantitation limit should be considered estimated and have been flagged "J" on the data tables.

- Tentatively Identified Compounds (TICs) have been evaluated and are presented on the data tables. Most of the TICs were reported at levels above the quantitation limit. The volatile TICs include numerous cycloalkane derivatives, some benzene derivatives and several alkanes and unknowns. The semivolatile TICs include numerous aromatic compounds (benzene, naphthalene, di-methyl and tri-methyl derivatives), unknown oxygenated compounds, and alkanes. The semivolatile TICs include numerous saturated hydrocarbons, oxygenated compounds, cyclohexane derivatives, naphthalene derivatives, biphenyl derivatives and benzene derivatives. The biphenyl derivatives are probably from the Aroclor mixtures present in some of the samples in this data set.

- The following high percent differences (>35%) were observed between results reported above the quantitation limit for several target compounds in the original analysis and reanalysis and/or dilution analysis of the following samples. Accordingly, the positive results reported for the following compounds should be considered estimated and have been flagged "J" on the sample data tables.

Sample	Compound	Result for Original Analysis	Result for Reanalysis/Dilution	Relative Standard Deviation
LO-205S-GW	acetone	-	24 / - µg/L	173%
LO-205S-GW	ethylbenzene	100 µg/L	270 E / 28 µg/L	NA / 112%

- Phenanthrene was reported in sample LO-204S-GW, but not in sample LO-204S-GWDUP, and fluoranthene was reported in sample LO-204S-GWDUP, but not in LO-204S-GW, with values below CRQL, 1 and 2 µg/L, respectively. Although

the associated mass spectra marginally met identification criteria, caution should be exercised in using these results.

- The reported trace-level results for pesticides in field duplicate pair LO-2-RES1-RWDUP and LO-2RES1-RW should be considered estimated and have been flagged "J" on the data tables unless previously flagged "U". The trace-level results were not confirmed by the detection of the same pesticides in both of the aforementioned samples. Furthermore, because of the trace-level presence of several of the pesticides in the associated field blank, it is possible that all trace-level pesticide results may be artifacts of contamination. Accordingly, these results should be used with a great deal of caution.

A complete support documentation of this organic quality assurance review is presented in Section 3 of this report.

B. Inorganic Data

The inorganic analysis of 28 monitoring well samples (including 3 field blanks) for Target Analyte List (TAL) total and dissolved metals and cyanide was performed by Skinner and Sherman Laboratories, Inc. of Waltham, Massachusetts. In addition, 3 residential well samples (including 1 field blank) were analyzed for TAL metals and cyanide by Warzyn, Inc. of Madison, Wisconsin and 2 dense, non-aqueous phase liquid (NAPL) samples were analyzed for TAL metals utilizing TCLP preparation and cyanide by Enseco-Rocky Mountain Analytical Laboratory (RMAL) of Arvada, Colorado. All monitoring well and NAPL samples were analyzed according to Contract Laboratory Program (CLP) protocols (SOW788), and the residential well samples were analyzed according to CLP protocols (SOW390, Document ILM02.1). The laboratories were requested to provide full CLP documentation to substantiate the results of the analyses performed.

The findings offered in this report are based upon a rigorous review of the sample holding times, blank analysis results, pre- and post-digestion spike recoveries, laboratory duplicate analyses, initial and continuing calibrations, ICP interference checks, instrument sensitivity, system performance, ICP serial dilutions, graphite furnace duplicate burns and the quantitation of positive results. The analytical results are provided in Section 2B.

Overall, the data quality was good. Contractual criteria and reporting requirements were met for the multiple data packages with the exception of the following. It should be emphasized that the following items are contractual in nature and do not necessarily affect data usability. Data usability is addressed separately.

Noncorrectable Deficiencies

1. An ICB result of 5.3 μg/L was obtained for selenium in SDG 212501. Since the result is greater than the CRDL (5.0 μg/L), the analysis should have been terminated (SOW788, E-7). The Skinner and Sherman Laboratory did not follow this procedure; however, since sample LO-201S-GW was bracketed by acceptable CCB results, no qualification is warranted.

2. The pH results prior to digestion for the ICP, GFAA and mercury analyses were above 2 for samples LO-205S-GW(Total), LO-201S-GW(Total), LO-204S-GW(Total), LO-204S-GWDUP(Total),LO-202S-GW(Total),LO-202D-GW(Total),LO-208S-GW(Total), LO-208S-GWDUP(Total and Filtered), LO-2101M-GW(Total) and LO-207S-GW(Total). In addition, the pH results prior to distillation for the cyanide analysis were less than 12 for all samples in SDG 212501. Per CLP protocol, the aqueous metal samples must be preserved at pH less than 2 and the aqueous cyanide samples must be preserved at a pH greater than 12 (SOW788, D-4). The laboratory should have contracted ERM-North Central prior to sample preparation of these samples. Data usability has been impacted and is addressed in the inorganic data qualifier section.

3. A separate determination of solids content was not performed for the laboratory duplicate samples LO-2106-WOD and LO-205S-WOD, as required (SOW788, E-12).

Comments

1. The result for chromium in sample LO-204D-GW is reported as not detected at or above the instrument detection limit of 4.0 μg/L on the associated Form I; however, a result of 3.95 μg/L was observed in the raw data for this sample. Since this result rounds to 4.0 μg/L by the EPA rounding rules, a result of 4.0 μg/L should have been reported (SOW788, B-16).

2. Warzyn, Inc. flagged the thallium results on the Form V and associated Form I's in SDG 4151 with an "N" qualifier code due to an 83.4 percent pre-digestion matrix spike recovery. A control limit of 85-115% recovery was reported on the Form V and was subsequently used by the laboratory for flagging results. According to the laboratory, the QAPP is the basis for the more stringent criterion.

3. Warzyn, Inc. did not use the CRDL (3 μg/L) as the control limit for flagging the laboratory duplicate result for lead (SOW390, ILM02.1, E-22). Instead, the laboratory used the IDL (2.0 μg/L) as a control limit and incorrectly flagged all lead results with a "*" on the Form VI and associated sample Form I's. According to the laboratory, the QAPP is the basis for the more stringent criterion.

4. Enseco Rocky Mountain Analytical Laboratory did not flag the results for iron, calcium and lead on the Form IX and associated Form I's in SDG 021054 with an "E" qualifier code as required. Percent differences greater than the QC limit of 10 percent were obtained for these analytes in the ICP serial dilution analysis and the initial results were greater than 50-times the corresponding IDLs (SOW ILM02.1, E-23).

5. The percent solids results for samples LO-2106S-WO and LO-205S-WO were incorrectly reported as 0.00% on the associated Form I's, V's or VI's. The actual percent solid results were 20.5% and 65.3%, respectively. In addition, the reported analyte results, spike added amounts and control limits were not corrected for moisture on the associated Form I's, V's or VI's. However, it should be noted that the sample matrix is oil and it is unlikely that a meaningful percent solids could be obtained. In fact, the percent solids sheet in the raw data indicated that "oil remained in the crucibles after the percent solid determination was done." The results reported on the data tables are on a "wet-weight" basis.

6. The SDG 021054 continuing calibration standard analyzed on 2/27/92 at 18:36 and the continuing calibration blank analyzed on 2/27/92 at 18:38 for arsenic (pg. 105 of data package) were not reported on the associated Forms II and III. The data reviewer calculated an acceptable recovery for the standard and response below the instrument detection limit for the blank; data quality was not affected.

7. A Form VIII (Standard Addition Results) was not included in the SDG 021054 data package submitted for review, as required (SOW788, B-29). The method of standard additions was used for the analysis of arsenic and selenium in sample LO-205S-WO and its laboratory duplicate, LO-205S-WOD, in this SDG. The data reviewer verified acceptable correlation factors (>0.995) for both analyses, and the results from these standard additions have been entered on the data tables.

8. The Form XIV's associated with SDG SD4151 did not accurately reflect which analytes were reported in the ICP analysis sequences performed on 3/8/92 (except for sodium) and 3/13/92 on instrument PE PLASMA40 or in the graphite furnace atomic absorption (GFAA) lead analysis performed on 3/6/92 on instrument V400B. The Form XIV should reflect only those analytes which were measured and reported in any one sample analysis by entering an "x" in the column of the analyte. In addition, the dilution factor of 2.00 recorded for calcium and magnesium in the raw data was not reported on the associated Form XIV for the ICP post-digestion spike sample LO-2-RES1-RW-A (SOW788, B-37).

9. The results for barium in sample LO-2-RES-RW and the corresponding matrix spike, LO-2-RES1-RW-S, and sample LO-2-RES1-RWDUP and the corresponding laboratory duplicate sample, LO-2-RES1-RWDUP-D, reported on Forms I, V and VI did not agree with the results obtained for this analyte in the raw data. The data reviewer has entered the correct result on the data tables.

Sample	Reported Result	Actual Result
LO-2-RES1-RW	32.0 µg/L	40.0 µg/L
LO-2-RES1-RW-S	1992 µg/L	2001 µg/L
LO-2-RES1-RWDUP	34.0 µg/L	42.0 µg/L
LO-2-RES1-RWDUP-D	34.0 µg/L	42.0 µg/L

10. The analysis of the solid LCS for mercury was incorrectly labelled as "BLANK" in SDG 021059 and SDG 021054.

With regard to data usability, principal areas of concern include blank contamination, sample preservation, correlation coefficients, CRDL recoveries, pre- and post-digestion spike recoveries, total and dissolved metals result comparison, and laboratory and field duplicate results. Based upon a review of the data provided, the following data qualifiers are offered. It should be noted that the following data usability issues represent an interpretation of the quality control results obtained for the project samples. Quite often, data qualifications address issues relating to sample matrix problems. Similarly, the validation guidelines routinely specify areas of the data that require qualification, yet the methods used for analysis do not require any corrective action by the laboratory. Accordingly, the following data usability issues should not necessarily be construed as an indication of laboratory performance.

Inorganic Data Qualifiers

- Due to the trace-level presence of beryllium, cadmium, copper, chromium, lead, manganese, nickel, potassium, vanadium and zinc in various laboratory and/or field blanks, the positive result for these analytes in the following samples should be considered qualitatively questionable and have been flagged "U" on the data tables.

Analyte	Applicable Samples
lead	LO-206D-GW(Total), LO-203D-GW(Total), LO-205S-GW(Filtered), LO-206S-GW(Filtered), LO-2106S-GW(Filtered), LO-203S-GW(Filtered), LO-203S-GWDUP(Filtered), LO-203D-GW(Filtered), LO-201D-GW(Total), LO-204D-GW(Total and Filtered), LO-205D-GW(Total and Filtered), LO-202D-GW(Total and Filtered), LO-2106-DR-GW(Total and Filtered), LO-2101L-GW(Total and Filtered), LO-2101M-GW(Total and Filtered), LO-2101D-GW(Total and Filtered), LO-2102L-GW(Total and Filtered), LO-207D-GW(Total and Filtered), LO-207S-GW(Total and Filtered), LO-2102D-GW(Total and Filtered), LO-204S-GW(Filtered), LO-204S-GWDUP(Filtered), LO-202S-GW(Filtered), LO-208S-GW(Filtered) and LO-208S-GWDUP(Filtered)

Analyte	Applicable Samples
copper	LO-206S-GW(Filtered) and LO-2106-WO
manganese	LO-203S-GW(Filtered) and LO-2101M-GW(Filtered)
nickel	LO-205S-GW(Filtered), LO-203S-GW(Filtered) and LO-203S-GWDUP(Filtered)
zinc	LO-206D-GW(Filtered), LO-201D-GW(Total), LO-204D-GW(Total), LO-205D-GW(Total), LO-202D-GW(Total), LO-2106-DR-GW(Total), LO-2101L-GW(Total), LO-2101D-GW(Total), LO-2102L-GW(Total), LO-207D-GW(Total), LO-102D-GW(Total) and LO-204S-GWDUP(Filtered)
beryllium	LO-205S-GW (Filtered), LO-201S-GW(Total), LO-204S-GW(Total), LO-204S-GWDUP(Total), LO-202S-GW(Total), LO-208S-GW(Total), LO-208S-GWDUP(Total) and LO-2101M-GW(Total)
vanadium	LO-201D-GW(Total), LO-204D-GW(Total), LO-205D-GW(Total), LO-202D-GW(Total), LO-2106-DR-GW(Total), LO-2101L-GW(Total), LO-2101D-GW(Total), LO-2102L-GW(Total), LO-207D-GW(Total), LO-207S-GW(Total) and LO-2102D-GW(Total)
cadmium	LO-204S-GWDUP(Total), LO-202D-GW(Total), LO-2101L-GW(Total), and LO-2101D-GW(Total)
chromium	LO-204S-GWDUP(Filtered), LO-208S-GW(Filtered) and LO-2101M-GW(Filtered)
potassium	LO-205S-WO and LO-2106-WO

- The analysis for total selenium for all samples in SDG 212501 and for dissolved thallium in all samples in SDG 212701 are unreliable and have been flagged "R" on the data tables. Very low recoveries (0.0% for selenium and 20.0% for thallium) were obtained in the associated matrix spike samples.

- The analysis for total selenium in samples LO-201S-FB, LO-201D-GW, LO-204D-GW, LO-205D-GW, LO-208S-FB, LO-208S-GWDUP, LO-2106-DR-GW, LO-2101L-GW, LO-2101D-GW, LO-2102L-GW, LO-207D-GW and LO-2102D-GW, for total arsenic in samples LO-201S-FB, LO-205D-GW, LO-208S-FB, LO-2106-DR-GW, LO-2101L-GW and LO-2101D-GW should be considered unreliable and have been flagged "R" on the data tables. Very low recoveries (17.2% for selenium and 18.2% for arsenic) were obtained in the associated Contract Required Detection Limit (CRDL) standards.

- The positive results for silver in samples LO-204S-GW(Filtered) and LO-204S-GWDUP(Filtered) and for mercury in samples LO-2106S-BW(Total) and LO-2106S-GW(Filtered) are unreliable and have been flagged "R" on the data tables. Very high percent differences (>50%) were obtained between the results for silver and mercury in the total and filtered analyses of the aforementioned samples.

- All positive results for all metals in samples LO-205S-GW(Total), LO-201S-GW(Total), LO-204S-GW(Total), LO-204S-GWDUP(Total), LO-202S-GW(Total), LO-202D-GW(Total), LO-208S-GW(Total), LO-208S-GWDUP(Total and Filtered), LO-2101M-GW(Total) and LO-207S-GW(Total) should be considered estimated and have been flagged "J" on the data tables. Similarly, the actual detection limits not previously flagged "U" or "R" for the aforementioned samples may be biased low and have been flagged "UL" on the data tables. The samples were not properly preserved at a pH less than 2.

- The positive results for cyanide in samples LO-204S-GW(Total) and LO-204S-GWDUP(Total) should be considered estimated and have been flagged "J" on the data tables. Similarly, the actual detection limits for cyanide in all samples in SDG 212501 except samples LO-204S-GWDUP(Total) and LO-204S-GW(Total) may be biased low and have been flagged "UL" on the data tables. The samples were not properly preserved at a pH greater than 12.

- Due to the matrix spike results outside the 75 to 125 percent criteria, the reported concentrations of the following analytes should be considered estimated and have been flagged "J" on the data tables. Similarly, the actual detection limits for these analytes in the associated samples may be higher than reported and have been flagged "UL" on the data tables.

Analyte	Estimated Sample Results	Biased Detection Limits	Percent Recovery
antimony	LO-202D-GW(Total)	LO-205S-WO and all samples in SDG 212601 and SDG 212501 except sample LO-202D-GW(Total)	70.7%, 32.9% and 64.9%
arsenic	LO-201S-GW(Total), LO-201D-GW(Total), LO-204S-GW(Total), LO-204S-GWDUP(Total), LO-204D-GW(Total), LO-202S-GW(Total), LO-202D-GW(Total), LO-208S-GW(Total), LO-208S-GWDUP(Total), LO-2101M-GW(Total), LO-2102L-GW(Total), LO-207D-GW(Total), LO-207S-GW(Total), LO-2102D-GW(Total), LO-205S-WO, LO-2106S-WO and all samples in SDG 212601 except sample LO-203S-FB(Total)	LO-203S-FB(Total)	-60.0%, 20.0%, 70.2% and 55.3%

Analyte	Estimated Sample Results	Biased Detection Limits	Percent Recovery
barium	LO-205S-WO		54.2%
chromium	LO-205S-WO		62.8%
cobalt		LO-205S-WO	67.9%
manganese	LO-205S-WO		72.3%
mercury		LO-205S-WO and LO-2106S-WO	36.0% and 48.0%
nickel	LO-205S-WO		70.6%
selenium	LO-205S-WO and LO-2106S-WO		18.0% and 36.0%
silver		All samples in SDG 212501	58.3%
thallium		All samples in SDG 212501	45.5%
zinc	LO-205S-WO		66.4%
cyanide	LO-204S-GW(Total) and LO-204S-GWDUP(Total)	All samples in SDG 212501 except samples LO-204S-GW(Total) and LO-204S-GWDUP(Total)	38.4%
lead	LO-2RES1-RWDUP		125.5%

- Due to the Contract Required Detection Limit (CRDL) results outside of the 90 to 110 percent criteria, the reported concentrations of the following analytes should be considered estimated and have been flagged "J" on the data tables. Similarly, the actual detection limits for these analytes in the associated samples may be higher than reported and have been flagged "UL" on the data tables.

Analyte	Estimated Sample Results	Biased Detection Limits	Percent Recovery
antimony		LO-205S-WO and LO-2106S-WO	63.4%, 67.4%, 87.2% and 78.8%

Analyte	Estimated Sample Results	Biased Detection Limits	Percent Recovery
arsenic	LO-206S-GW(Filtered), LO-206D-GW(Filtered), LO-203S-GW(Filtered), LO-203D-GW(Filtered), LO-201D-GW(Total), LO-204D-GW(Total), LO-202S-GW(Total), LO-202D-GW(Total), LO-208S-GW(Total), LO-208S-GWDUP(Total), LO-2101M-GW(Total), LO-2102L-GW(Total), LO-207D-GW(Total), LO-207S-GW(Total), LO-2102D-GW(Total), LO-2RES-1RW and LO-2RES1-RWDUP		114%, 18.2% and 118.8%
beryllium	LO-201S-FB(Total)	LO-201D-GW(Total), LO-204D-GW(Total), LO-205D-GW(Total), LO-202D-GW(Total), LO-208S-FB(Total), LO-2106-DR-GW(Total), LO-2101L-GW(Total), LO-2101D-GW(Total), LO-2102L-GW(Total), LO-207D-GW(Total), LO-207S-GW(Total), LO-2102D-GW(Total), and all samples in SDG 212801 except sample LO-205S-GW(Filtered)	84.4%, 113.2% and 86.5%
cadmium	LO-205S-GW(Total) and LO-206S-GW(Total)	All "not-detected" results in SDG 212601	72.3% and 68.1%
chromium	LO-204S-GW(Total), LO-204D-GW(Total), LO-208S-GWDUP(Total), LO-2102L-GW(Total) and LO-207S-GW(Total)	All results in SDG 212801, LO-201S-FB(Total), LO-201D-GW(Total), LO-205D-GW(Total), LO-208S-FB(Total), LO-2106-DR-GW(Total), LO-2101L-GW(Total), LO-2101D-GW(Total), LO-207D-GW(Total), LO-2RES1-RW, LO-2RES1-RWDUP and LO-2RES1-FB	63.4%, 63.4%, 79.0%, 75.8%, 55.0% and 80.0%
lead	LO-203S-FB(Filtered), LO-201S-FB(Total), LO-208S-FB(Total), LO-201S-FB(Filtered), LO-208S-FB(Total), LO-205S-WO and LO-2106S-WO		418.7%, 194.7%, 74.3%, 121.2%, 115.4% and 119.6%
manganese	LO-205S-WO and LO-2106S-WO	LO-203S-FB(Total)	88.8%, 88.3%, 111.0%, 116.6% and 113.5%
nickel	LO-2106S-WO		121.6% and 112.3%
silver		LO-206S-GW(Total), LO-203S-FB(Total), LO-203S-GW(Total) and LO-203S-GWDUP(Total)	112.6%
vanadium	LO-205S-WO and LO-2106S-WO		111.7%, 114.2%, 118.2% and 117.6%

Analyte	Estimated Sample Results	Biased Detection Limits	Percent Recovery
zinc	LO-201S-FB(Total), LO-208S-FB(Total), LO-207S-GW(Total), LO-206S-GW(Total), LO-2106S-GW(Total), LO-203D-GW(Total), LO-205S-WO and LO-2106S-WO	LO-206D-GW(Total) and LO-203S-FB(Total)	129.5%, 143.0%, 86.3%, 112.3%, 115.6% and 116.9%

- Due to the ICP serial dilution results outside the 10 percent difference criteria, the reported concentrations of the following analytes should be considered estimated and have been flagged "J" on the data tables.

Analyte	Estimated Sample Results	Percent Difference
barium	All positive results in SDG 212701	12.2%
iron	LO-205S-WO and all positive results in SDG 212701	12.4% and 30.5%
calcium	LO-205S-WO	12.2%
vanadium	LO-201S-GW(Total), LO-204S-GW(Total), LO-204S-GWDUP(Total), LO-202S-GW(Total), LO-208S-GW(Total), LO-208S-GWDUP(Total) and LO-2101M-GW(Total)	15.7%
zinc	LO-201S-FB(Total), LO-201S-GW(Total), LO-204S-GW(Total), LO-204S-GWDUP(Total), LO-202S-GW(Total), LO-208S-FB, LO-208S-GW(Total), LO-208S-GWDUP(Total), LO-2101M-GW(Total) and LO-207S-GW(Total)	15.2%
lead	LO-205S-WO	16.6%

- The positive results for aluminum and potassium in all samples in SDG 212501, for arsenic and iron in sample LO-2106S-WO and for zinc in sample LO-205S-WO should be considered estimated and have been flagged "J" on the data tables. High relative percent differences (>20%) were obtained for these analytes in the associated laboratory duplicate analyses.

- The positive result for arsenic in sample LO-205S-GW(Filtered) should be considered estimated and has been flagged "J" on the data tables. Similarly, the actual detection limit for selenium in sample LO-206S-GW(Filtered) may be biased low and has been

flagged "UL" on the data tables. Low correlation coefficients (<0.995) were obtained in the method of standard addition analysis of these samples.

- The positive results for arsenic in samples LO-205S-GW(Total and Filtered) and for sodium in samples LO-203S-GWDUP(Total and Filtered), LO-208S-GW(Total and Filtered), LO-2106-DR-GW(Total and Filtered) and LO-2101L-GW(Total and Filtered) should be considered estimated and have been flagged "J" on the data tables. High percent differences ($>10\%$) were obtained between the results for these analytes in the total and filtered analyses of the aforementioned samples.

- Sample pairs LO-203S-GW(Total and Filtered) and LO-203S-GWDUP(Total and Filtered); LO-208S-GW(Total and Filtered) and LO-208S-GWDUP(Total and Filtered); and LO-204S-GW(Total and Filtered) and LO-204S-GWDUP(Total and Filtered) were identified as field duplicates. Good precision ($<20\%$ relative percent differences) was obtained between the results in the aforementioned field duplicate pairs with the exception of the following, which have been flagged "J" on the data tables and should be considered estimated.

Analyte(s)	Field Duplicate Pair(s)
aluminum, potassium and mercury	LO-203S-GW(Total) and LO-203S-GWDUP(Total)
aluminum, calcium, chromium, iron, lead, magnesium and potassium	LO-208S-GW(Total) and LO-208S-GWDUP(Total)
iron	LO-204S-GW(Filtered) and LO-204S-GWDUP(Filtered), LO-208S-GW(Filtered) and LO-208S-GWDUP(Filtered)
aluminum, arsenic, barium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, nickel and zinc	LO-204S-GW(Total) and LO-204S-GWDUP(Total)

- The actual detection limits for selenium in samples LO-205S-GW(Total and Filtered), LO-206D-GW(Total and Filtered), LO-203S-GWDUP(Total), LO-203D-GW(Total and Filtered), LO-203S-FB(Filtered), LO-2106S-GW(Filtered), LO-201S-FB(Filtered), LO-201D-GW(Filtered), LO-204S-GW(Filtered), LO-204S-GWDUP(Filtered), LO-204D-GW(Filtered), LO-202D-GW(Filtered), LO-208S-GW(Filtered), LO-208S-GWDUP(Filtered), LO-2106-DR-GW(Filtered), LO-2101L-GW(Filtered), LO-2101M-GW(Filtered), LO-2101D-GW(Filtered), LO-207D-GW(Filtered), LO-207S-GW(Filtered), and LO-2102D-GW(Filtered); and for thallium in samples LO-205S-GW(Total and Filtered), LO-206S-GW(Total), LO-206D-GW(Total and Filtered), LO-

2106S-GW(Total), LO-203S-GW(Total), LO-203D-GW(Total), LO-201S-GW(Total), LO-201D-GW(Total), LO-204S-GW(Total), LO-204S-GWDUP(Total), LO-202S-GW(Total),LO-205D-GW(Total),LO-202D-GW(Total),LO-208S-GW(Total),LO-208S-GWDUP(Total),LO-2106-DR-GW(Total),LO-2102L-GW(Total),LO-207D-GW(Total), LO-207S-GW(Total), LO-2102D-GW(Total) and LO-2106S-WO may be biased low and have been flagged "UL" on the data tables. Similarly, the positive results for arsenic in samples LO-201D-GW(Filtered) and LO-2102L-GW(Filtered); and for lead in sample LO-208S-FB(Filtered) should be considered estimated and have been flagged "J" on the data tables. Recoveries outside of the 85-115 percent criteria were obtained for the aforementioned analytes in the corresponding post-digestion spike analyses.

C. Conclusions

This quality assurance review has identified aspects of the analytical data that have required qualification. In general, the majority of the data represents good qualitative and quantitative analyses. Nonetheless, a portion of the data has been either qualified or rejected. To confidently use any of the analytical results from the data sets examined, the data users should understand the qualifications and limitations stated in this report.

Organic report prepared by:

for Jill B. Henes, Ph.D.
Quality Assurance Specialist/Principal

Inorganic report reviewed by:

Meg A. Clark
Quality Assurance Chemist

Inorganic report prepared by:

William E. Strohben, Jr.
Quality Assurance Chemist

Report reviewed and approved by:

Rock J. Vitale
Quality Assurance Specialist/Principal

Date: 7/8/92

ENVIRONMENTAL STANDARDS, INC.
1220 Valley Forge Road
P.O. Box 911
Valley Forge, PA 19481

(215) 935-5577

SECTION 2

ANALYTICAL RESULTS

A. ORGANIC DATA

VOLATILE ORGANIC ANALYSIS - ANALYTICAL RESULTS - RESIDENTIAL WELL DATA -page 1

ERM-North Central Sample Number LO-		2-TBS	2RES1-FB	2-RES1-RWDUP	2-RES1-RW
Laboratory Sample Number		480663	480668	480669	480665
Remarks					
Units		ug/L	ug/L	ug/L	ug/L
VOLATILE COMPOUNDS	Quantitation Limit	Trip Blank	Field Blank	Duplicate of LO-2-RES1-RW	
Chloromethane	1	UL	UL	UL	UL
Bromomethane	1				
Vinyl Chloride	1				
Chloroethane	1				
Methylene Chloride	1	4	4	2 U	3 U
Acetone	5				
Carbon Disulfide	1	UL	UL	UL	UL
1,1-Dichloroethene	1				
1,1-Dichloroethane	1				
cis-1,2-Dichloroethene	1				
trans-1,2-Dichloroethene	1				
Chloroform	1		3		
1,2-Dichloroethane	1				
Bromochloromethane	1				
2-Butanone	5				
1,1,1-Trichloroethane	1				
Carbon Tetrachloride	1				
Vinyl Acetate	1				
Bromodichloromethane	1				
1,1,2,2-Tetrachloroethane	1				
1,2-Dichloropropane	1				
trans-1,3-Dichloropropene	1				
Trichloroethene	1				
Dibromochloromethane	1				
1,1,2-Trichloroethane	1				
Benzene	1				

NOTES:

- \- Compound was not detected.
- U This compound should be considered "not-detected since it was detected in a blank at a similar level.
- R Unreliable result - Compound may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
- UL This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.

VOLATILE ORGANIC ANALYSIS - ANALYTICAL RESULTS - RESIDENTIAL WELL DATA -page 2

ERM-North Central Sample Number LO-		2-TBS	2RES1-FB	2-RES1-RWDUP	2-RES1-RW
Laboratory Sample Number		480663	480668	480669	480665
Remarks					
Units		ug/L	ug/L	ug/L	ug/L
VOLATILE COMPOUNDS	Quantitation Limit	Trip Blank	Field Blank	Duplicate of LO-2RES1-RW	
cis-1,3-Dichloropropene	1				
Bromoform	1				
2-Hexanone	5				
4-Methyl-2-Pentanone	1				
Tetrachloroethene	1				
Toluene	1				
Chlorobenzene	1				
Ethylbenzene	1				
Styrene	1				
Total Xylenes	1				
1,2-Dibromoethane	1				
1,2-Dibromo-3-Chloropropane	1				
1,3-Dichlorobenzene	1				
1,4-Dichlorobenzene	1				
1,2-Dichlorobenzene	1				
Quantitation Limit Multiplier		1.0	1.0	1.0	1.0
Date of Sample Collection		2/18/92	2/18/92	2/18/92	2/18/92
Date Sample Received by Laboratory		2/20/92	2/20/92	2/20/92	2/20/92
Date of Sample Analysis		2/21/92	2/21/92	2/21/92	2/21/92
Instrument Used for Analysis		MS-51	MS-51	MS-51	MS-51

NOTES:

- \- Compound was not detected.
- U This compound should be considered "not-detected since it was detected in a blank at a similar level.
- R *Unreliable result - Compound may or* may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
- UL This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.

EXTRACTABLE ORGANIC ANALYSIS - ANALYTICAL RESULTS - RESIDENTIAL WELL DATA -page 3

ERM-North Central Sample Number LO-		2-TBS	2RES1-FB	2-RES1-RWDUP	2-RES1-RW
Laboratory Sample Number		480663	480668	480669	480665
Remarks					
Units		ug/L	ug/L	ug/L	ug/L
SEMIVOLATILE COMPOUNDS	Quantitation Limit	Trip Blank	Field Blank	Duplicate of LO-2RES1-RW	
Phenol	5	NA			
bis(2-Chloroethyl)ether	5	NA			
2-Chlorophenol	5	NA			
1,3-Dichlorobenzene	5	NA			
1,4-Dichlorobenzene	5	NA			
Benzyl Alcohol	5	NA			
1,2-Dichlorobenzene	5	NA			
2-Methylphenol	5	NA			
bis(2-Chloroisopropyl)ether	5	NA			
4-Methylphenol	5	NA			
N-Nitroso-di-n-Propylamine	5	NA			
Hexachloroethane	5	NA			
Nitrobenzene	5	NA			
Isophorone	5	NA			
2-Nitrophenol	5	NA			
2,4-Dimethylphenol	5	NA			
Benzoic Acid	5	NA			
bis(2-Chloroethoxy)methane	5	NA			
2,4-Dichlorophenol	5	NA			
1,2,4-Trichlorobenzene	5	NA			
Naphthalene	5	NA			
4-Chloroaniline	5	NA			
Hexachlorobutadiene	5	NA			
4-Chloro-3-Methylphenol	5	NA			
2-Methylnaphthalene	5	NA			

NOTES:

- \- Compound was not detected.
- U This compound should be considered "not-detected since it was detected in a blank at a similar level.
- R Unreliable result - Compound may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
- UL This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.
- NA Not analyzed.

EXTRACTABLE ORGANIC ANALYSIS - ANALYTICAL RESULTS - RESIDENTIAL WELL DATA -page 4

ERM-North Central Sample Number LO-		2-TBS	2RES1-FB	2-RES1-RWDUP	2-RES1-RW
Laboratory Sample Number		480663	480668	480669	480665
Remarks					
Units		ug/l	ug/l	ug/l	ug/l
SEMIVOLATILE COMPOUNDS	Quantitation Limit	Trip Blank	Field Blank	Duplicate of LO-2RES1-RW	
Hexachlorocyclopentadiene	5	NA			
2,4,6-Trichlorophenol	5	NA			
2,4,5-Trichlorophenol	20	NA			
2-Chloronaphthalene	5	NA			
2-Nitroaniline	20	NA			
Dimethylphthalate	5	NA			
Acenaphthylene	5	NA			
3-Nitroaniline	20	NA			
Acenaphthene	5	NA			
2,4-Dinitrophenol	20	NA			
4-Nitrophenol	20	NA			
Dibenzofuran	5	NA			
2,4-Dinitrotoluene	5	NA			
2,6-Dinitrotoluene	5	NA			
Diethylphthalate	5	NA			
4-Chlorophenylphenylether	5	NA			
Fluorene	5	NA			
4-Nitroaniline	20	NA			
4,6-Dinitro-2-Methylphenol	20	NA			
N-Nitrosodiphenylamine	5	NA			
4-Bromophenylphenylether	5	NA			
Hexachlorobenzene	5	NA			
Pentachlorophenol	20	NA			
Phenanthrene	5	NA			

NOTES:

- \- Compound was not detected.
- U This compound should be considered "not-detected since it was detected in a blank at a similar level.
- R Unreliable result - Compound may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
- UL This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.
- NA Not analyzed.

EXTRACTABLE ORGANIC ANALYSIS - ANALYTICAL RESULTS - RESIDENTIAL WELL DATA -page 5

ERM-North Central Sample Number LO- / Laboratory Sample Number		2-TBS 480663	2RES1-FB 480668	2-RES1-RWDUP 480669	2-RES1-RW 480665
Remarks					
Units		ug/L	ug/L	ug/L	ug/L
SEMIVOLATILE COMPOUNDS	Quantitation Limit	Trip Blank	Field Blank	Duplicate of LO-2RES1-RW	
Anthracene	5	NA			
Di-n-Butylphthalate	5	NA	4 J	5 U	5 U
Fluoranthene	5	NA			
Pyrene	5	NA			
Butylbenzylphthalate	5	NA	0.6 J	5 U	5 U
3,3'-Dichlorobenzidine	5	NA			
Benzo(a)anthracene	5	NA			
bis(2-Ethylhexyl)phthalate	5	NA	4 J	5 U	5 U
Chrysene	5	NA			
Di-n-Octylphthalate	5	NA			
Benzo(b)fluoranthene	5	NA			
Benzo(k)fluoranthene	5	NA			
Benzo(a)pyrene	5	NA			
Indeno(1,2,3-cd)pyrene	5	NA			
Dibenz(a,h)anthracene	5	NA			
Benzo(g,h,i)perylene	5	NA			
Quantitation Limit Multiplier		NA	1.00	1.00	1.00
Date of Sample Collection		NA	2/18/92	2/18/92	2/18/92
Date Sample Received by Laboratory		NA	2/20/92	2/20/92	2/20/92
Date Sample Extracted		NA	2/24/92	2/24/92	2/24/92
Date of Sample Analysis		NA	2/26/92	2/26/92	3/2/92
Instrument Used for Analysis		NA	MS-57	MS-57	MS-57

NOTES:

- \- Compound was not detected.
- U This compound should be considered "not-detected since it was detected in a blank at a similar level.
- R *Unreliable result - Compound may or may not be present in this sample.*
- J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
- UL This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.
- NA Not analyzed.

CLP - TENTATIVELY IDENTIFIED COMPOUNDS - EST. CONC. - RESIDENTIAL WELL DATA				-page 6
ERM-North Central Sample Number LO-	2-TBS	2RES1-FB	2-RES1-RWDUP	2-RES1-RW
Laboratory Sample Number	480663	480668	480669	480665
Remarks				
Units	ug/l	ug/l	ug/l	ug/l
COMPOUNDS	Trip Blank	Field Blank	Duplicate of LO-2RES1-RW	
VOLATILE COMPONENTS	-	-		
Unknown			85 J	86 J
SEMIVOLATILE COMPONENTS	NA	-		-
Dimethylbutanone			26 JN	
Unknown			10 J	

NOTES:

- \- Compound was not detected.
- U This compound should be considered "not-detected since it was detected in a blank at a similar level.
- R Unreliable result - Compound may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
- UL This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.
- N Tentative identification.
- NA Not analyzed.

EXTRACTABLE ORGANIC ANALYSIS - ANALYTICAL RESULTS - RESIDENTIAL WELL DATA -page 7

ERM-North Central Sample Number LO- / Laboratory Sample Number		2-TBS 480663	2RES1-FB 480668	2-RES1-RWDUP 480669	2-RES1-RW 480665
Remarks					
Units		ug/L	ug/L	ug/L	ug/L
PESTICIDES	Quantitation Limit	Trip Blank	Field Blank	Duplicate of LO-2RES1-RW	
alpha-BHC	0.010	NA			
beta-BHC	0.010	NA			
delta-BHC	0.010	NA			
gamma-BHC (Lindane)	0.010	NA			0.00052 J
Heptachlor	0.010	NA	0.0086 J	0.01 U	
Aldrin	0.010	NA			
Heptachlor Epoxide	0.010	NA			
Endosulfan I	0.010	NA		0.00052 J	
Dieldrin	0.020	NA			
4,4'-DDE	0.020	NA		0.0014 J	
Endrin	0.020	NA			
Endosulfan II	0.020	NA			
4,4'-DDD	0.020	NA			0.0035 J
Endosulfan Sulfate	0.020	NA		0.00053 J	0.00081 J
4,4'-DDT	0.020	NA			
Methoxychlor	0.020	NA	0.0083 J	0.02 U	0.02 U
Endrin Ketone	0.020	NA			
alpha-Chlordane	0.010	NA			
gamma-Chlordane	0.010	NA	0.00051 J	0.01 U	
Toxaphene	1.0	NA			

NOTES:

- \- Compound was not detected.
- U This compound should be considered "not-detected since it was detected in a blank at a similar level.
- R Unreliable result - Compound may or may not be present in this sample.
- J *Quantitation is approximate due to* limitations identified during the quality assurance review (data validation).
- UL This compound was not detected, but the quantitation limit is probably higher due to a low bias identified
- NA Not analyzed.

EXTRACTABLE ORGANIC ANALYSIS - ANALYTICAL RESULTS - RESIDENTIAL WELL DATA -page 8

ERM-North Central Sample Number LO-	2-TBS	2RES1-FB	2-RES1-RWDUP	2-RES1-RW
Laboratory Sample Number	480663	480668	480669	480665
Remarks				
Units	ug/L	ug/L	ug/L	ug/L
AROCLORS	Quantitation Limit	Trip Blank	Field Blank	Duplicate of LO-2RES1-RW	
Aroclor-1016	0.20	NA			
Aroclor-1221	0.40	NA			
Aroclor-1232	0.20	NA			
Aroclor-1242	0.20	NA			
Aroclor-1248	0.20	NA			
Aroclor-1254	0.20	NA			
Aroclor-1260	0.20	NA			
Quantitation Limit Multiplier		NA	1.00	1.00	1.00
Date of Sample Collection		NA	2/18/92	2/18/92	2/18/92
Date Sample Received by Laboratory		NA	2/20/92	2/20/92	2/20/92
Date Sample Extracted		NA	2/24/92	2/24/92	2/24/92
Date of Sample Analysis		NA	2/27/92	2/27/92	2/27/92

NOTES:

- \- Compound was not detected.
- U This compound should be considered "not-detected since it was detected in a blank at a similar level.
- R Unreliable result - Compound may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
- UL This compound was not detected, but the quantitation limit is probably higher due to a low bias identified
- NA Not analyzed.

VOLATILE ORGANIC ANALYSIS - ANALYTICAL RESULTS - NAPL DATA - WET WEIGHT BASIS -page 1

ERM-North Central Sample Number		LO-205S-DN	LO-2106S-DN			
Laboratory Sample Number		21012-01	21046-01			
Remarks						
Units		ug/Kg	ug/Kg			
VOLATILE COMPOUNDS	Quantitation limit					
Chloromethane	1200					
Bromomethane	1200					
Vinyl Chloride	1200					
Chloroethane	1200					
Methylene Chloride	1200	310000 U				
Acetone	1200					
Carbon Disulfide	1200					
1,1-Dichloroethene	1200					
1,1-Dichloroethane	1200					
Total 1,2-Dichloroethene	1200					
Chloroform	1200					
1,2-Dichloroethane	1200					
Bromochloromethane	1200					
2-Butanone	1200					
1,1,1-Trichloroethane	1200					
Carbon Tetrachloride	1200					
Bromodichloromethane	1200					
1,1,2,2-Tetrachloroethane	1200					
1,2-Dichloropropane	1200					
trans-1,3-Dichloropropene	1200					
Trichloroethene	1200					
Dibromochloromethane	1200					
1,1,2-Trichloroethane	1200					
Benzene	1200					

NOTES:

- \- Compound was not detected.
- U This compound should be considered "not-detected since it was detected in a blank at a similar level.
- R Unreliable result - Compound may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
- UL This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.

VOLATILE ORGANIC ANALYSIS - ANALYTICAL RESULTS - MAPL DATA - WET WEIGHT BASIS						-page 2
ERM-North Central Sample Number		LO-2055-DN	LO-2106S-DN			
Laboratory Sample Number		21012-01	21046-01			
Remarks		Oil	Oil			
Units		ug/kg	ug/kg			
VOLATILE COMPOUNDS	Quantitation Limit					
cis-1,3-Dichloropropene	1200					
Bromoform	1200		UL			
2-Hexanone	1200		300000 J			
4-Methyl-2-Pentanone	1200	UL	UL			
Tetrachloroethene	1200					
Toluene	1200		64000 J			
Chlorobenzene	1200					
Ethylbenzene	1200	45000 J	320000			
Styrene	1200					
Total Xylenes	1200	180000 J	1700000			
Quantitation Limit Multiplier		258.3	258.3			
Date of Sample Collection		2/18/92	2/19/92			
Date Sample Received by Laboratory		2/19/92	2/20/92			
Date of Sample Analysis		3/1/92	2/29/92			
Instrument Used for Analysis		HPD	HPD			

NOTES:

- \- Compound was not detected.
- U This compound should be considered "not-detected since it was detected in a blank at a similar level.
- R Unreliable result - Compound may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
- UL This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.

CLP - TENTATIVELY IDENTIFIED COMPOUNDS - ESTIMATED CONCENTRATIONS - NAPL DATA - ALL SOLIDS REPORTED ON A WET WEIGHT BASIS				-page 3
ERM-North Central Sample Number Laboratory Sample Number	LO-205S-DN 21012-01	LO-2106S-DN 21046-01		
Remarks				
Units	ug/Kg	ug/Kg		
COMPOUNDS				
VOLATILE COMPONENTS	-	-		
C3 - Substituted Cyclohexane	260000 JN	450000 JN		
Propylester Cyanic Acid		390000 JN		
C3-Substituted Cyclopentane	500000 JN			
Unsaturated Hydrocarbons	200000 JN	610000 JN		
C4-Substituted Cyclohexane	650000 JN			
C4-Substituted Cyclopentane	380000 JN			
C3-Alkylbenzene (Number of Peaks)	990000 (2) JN	4070000 (5) JN		
Decahydronaphthalene	190000 JN			
Saturated Hydrocarbons (Number of Peaks)	1740000 (3) JN	4890000 (7) JN		

EXTRACTABLE ORGANIC ANALYSIS - ANALYTICAL RESULTS - NAPL DATA - WET WEIGHT BASIS -page 4

ERM-North Central Sample Number		LO-205S-DN	LO-210GS-DN		
Laboratory Sample Number		21012-01	21046-01		
Remarks		Oil	Oil		
Units		ug/Kg	ug/Kg		
SEMIVOLATILE COMPOUNDS	Quantitation Limit				
Phenol	10000				
bis(2-Chloroethyl)ether	10000		UL		
2-Chlorophenol	10000				
1,3-Dichlorobenzene	10000				
1,4-Dichlorobenzene	10000				
Benzyl Alcohol	10000				
1,2-Dichlorobenzene	10000				
2-Methylphenol	10000				
2,2'-oxybis(1-chloropropane)	10000	UL	UL		
4-Methylphenol	10000				
N-Nitroso-di-n-Propylamine	10000	UL	UL		
Hexachloroethane	10000				
Nitrobenzene	10000				
Isophorone	10000		UL		
2-Nitrophenol	10000				
2,4-Dimethylphenol	10000				
Benzoic Acid	10000				
bis(2-Chloroethoxy)methane	10000	UL	UL		
2,4-Dichlorophenol	10000				
1,2,4-Trichlorobenzene	10000				
Naphthalene	10000	150000 J	210000 J		
4-Chloroaniline	10000				
Hexachlorobutadiene	10000				
4-Chloro-3-Methylphenol	10000				
2-Methylnaphthalene	10000	1000000	1300000		

NOTES:

- \- Compound was not detected.
- U This compound should be considered "not-detected since it was detected in a blank at a similar level.
- R Unreliable result - Compound may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
- UL This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.

EXTRACTABLE ORGANIC ANALYSIS - ANALYTICAL RESULTS - NAPL DATA - WET WEIGHT BASIS -page 5

ERM-North Central Sample Number		LO-205S-ON	LO-210S-ON			
Laboratory Sample Number		21012-01	21046-01			
Remarks		Oil	Oil			
Units		ug/Kg	ug/Kg			
SEMIVOLATILE COMPOUNDS	Quantitation Limit					
Hexachlorocyclopentadiene	10000					
2,4,6-Trichlorophenol	10000					
2,4,5-Trichlorophenol	25000					
2-Chloronaphthalene	10000					
2-Nitroaniline	25000	UL	UL			
Dimethylphthalate	10000					
Acenaphthylene	10000					
3-Nitroaniline	25000					
Acenaphthene	10000		58000 J			
2,4-Dinitrophenol	25000					
4-Nitrophenol	25000					
Dibenzofuran	10000					
2,4-Dinitrotoluene	10000		66000 J			
2,6-Dinitrotoluene	10000					
Diethylphthalate	10000					
4-Chlorophenylphenylether	10000	UL				
Fluorene	10000	120000 J	100000 J			
4-Nitroaniline	25000					
4,6-Dinitro-2-Methylphenol	25000					
N-Nitrosodiphenylamine	10000		250000 J*			
4-Bromophenylphenylether	10000					
Hexachlorobenzene	10000					
Pentachloropnenol	25000					
Phenanthrene	10000	27000 J	250000 J			

NOTES:

- \- Compound was not detected.
- U This compound should be considered "not-detected since it was detected in a blank at a similar level.
- R Unreliable result - Compound may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
- UL This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.
- * Cannot be distinguished from diphenylamine.

EXTRACTABLE ORGANIC ANALYSIS - ANALYTICAL RESULTS - NAPL DATA - WET WEIGHT BASIS -page 6

ERM-North Central Sample Number		LO-205S-DN	LO-2106S-DN		
Laboratory Sample Number		21012-01	21046-01		
Remarks		Oil	Oil		
Units		ug/Kg	ug/Kg		
SEMIVOLATILE COMPOUNDS	Quantitation Limit				
Anthracene	10000				
Di-n-Butylphthalate	10000				
Fluoranthene	10000				
Pyrene	10000				
Butylbenzylphthalate	10000				
3,3'-Dichlorobenzidine	10000				
Benzo(a)anthracene	10000				
bis(2-Ethylhexyl)phthalate	10000		110000 J		
Chrysene	10000				
Di-n-Octylphthalate	10000				
Benzo(b)fluoranthene	10000				
Benzo(k)fluoranthene	10000				
Benzo(a)pyrene	10000				
Indeno(1,2,3-cd)pyrene	10000				
Dibenz(a,h)anthracene	10000				
Benzo(g,h,i)perylene	10000				
Quantitation Limit Multiplier		100	50.0		
Date of Sample Collection		2/18/92	2/19/92		
Date Sample Received by Laboratory		2/19/92	2/20/92		
Date Sample Extracted		3/2/92	3/2/92		
Date of Sample Analysis		3/16/92	3/16/92		
Instrument Used for Analysis		4500-R	4500-R		

NOTES:

- \- Compound was not detected.
- U This compound should be considered "not-detected since it was detected in a blank at a similar level.
- R Unreliable result - Compound may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
- UL This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.

CLP - TENTATIVELY IDENTIFIED COMPOUNDS - ESTIMATED CONCENTRATIONS -page 7
- NAPL DATA - ALL SOLIDS REPORTED ON A WET WEIGHT BASIS

ERM-North Central Sample Number	LO-205S-DN	LO-2106S-DN		
Laboratory Sample Number	21012-01	21046-01		
Remarks				
Units	ug/Kg	ug/Kg		
COMPOUNDS				
SEMIVOLATILE COMPONENTS		-		
Saturated Hydrocarbons (Number of Peaks)	30786000 (15) JN	18490000 (13) JN		
Oxygenated Hydrocarbon	980000 JN	790000 JN		
Dihydro-6H-purin-6-one	4700000 JN	2700000 JN		
1=Methylnaphthalene	1600000 JN	1500000 JN		
Substituted Cyclohexane	1100000 JN			
Dimethylnaphthalenes	4000000 JN	5200000 JN		
Trimethylnaphthalenes	3520000 JN	4020000 JN		
Dimethyl-1,1'-biphenyl Isomer	1300000 JN			
C3-Alkylbenzene		1300000 JN		
Unknown Alcohol		760000 JN		

EXTRACTABLE ORGANIC ANALYSIS - ANALYTICAL RESULTS - NAPL DATA - WET WEIGHT BASIS						-page 8
ERM-North Central Sample Number		LO-2055-DN		LO-2106S-DN		
Laboratory Sample Number		21012-01		21046-01		
Remarks		Oil		Oil		
Units		ug/Kg		ug/Kg		
PESTICIDES	Quantitation Limit					
alpha-BHC	51		Ul		Ul	
beta-BHC	51					
delta-BHC	51					
gamma-BHC (Lindane)	51					
Heptachlor	51					
Aldrin	51					
Heptachlor Epoxide	51					
Endosulfan I	51					
Dieldrin	99					
4,4'-DDE	99					
Endrin	99					
Endosulfan II	99					
4,4'-DDD	99					
Endosulfan Sulfate	99					
4,4'-DDT	99					
Methoxychlor	510					
Endrin Ketone	99					
Endrin Aldehyde	99					
alpha-Chlordane	51					
gamma-Chlordane	51					
Toxaphene	5100					

NOTES:

- \- Compound was not detected.
- U This compound should be considered "not-detected since it was detected in a blank at a similar level.
- R Unreliable result - Compound may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
- Ul This compound was not detected, but the quantitation limit is probably higher due to a low bias identified

EXTRACTABLE ORGANIC ANALYSIS - ANALYTICAL RESULTS - NAPL DATA - WET WEIGHT BASIS -page 9

ERM-North Central Sample Number		LO-205S-DN	LO-2106S-DN			
Laboratory Sample Number		21012-01	21046-01			
Remarks		Oil	Oil			
Units		ug/Kg	ug/Kg			
AROCLORS	Quantitation Limit					
Aroclor-1016	990					
Aroclor-1221	2010					
Aroclor-1232	990					
Aroclor-1242	990	19000 J	30000			
Aroclor-1248	990					
Aroclor-1254	990					
Aroclor-1260	990	17000 J	22000			
Quantitation Limit Multiplier		20.2	20.2			
Date of Sample Collection		2/18/92	2/19/92			
Date Sample Received by Laboratory		2/19/92	2/20/92			
Date Sample Extracted		3/2/92	3/2/92			
Date of Sample Analysis		3/13/92	3/13/92			

NOTES:

- \- Compound was not detected.
- U This compound should be considered "not-detected since it was detected in a blank at a similar level.
- R Unreliable result - Compound may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
- UL This compound was not detected, but the quantitation limit is probably higher due to a low bias identified

TCLP VOLATILE ORGANIC ANALYSIS - ANALYTICAL RESULTS - NAPL DATA (TCLP) -page 1

ERM-North Central Sample Number		LO-205S-DNT	LO-2106S-DNT			
Laboratory Sample Number		21012-01T	21046-01T			
Remarks		Oil	Oil			
Units		ug/Kg	ug/Kg			
TCLP VOLATILE COMPOUNDS	Quantitation Limit					
Vinyl Chloride	1200					
1,1-Dichloroethene	1200					
Chloroform	1200					
1,2-Dichloroethane	1200					
2-Butanone	1200					
Carbon Tetrachloride	1200					
Trichloroethene	1200					
Benzene	1200					
Tetrachloroethene	1200					
Chlorobenzene	1200					
Quantitation Limit Multiplier		25.0	671.9			
Date Sample Collected		2/18/92	2/19/92			
Date Received by Laboratory		2/19/92	2/20/92			
Date of Analysis		3/1/92	3/1/92			
Instrument Used for Analysis		HPD	HPD			

NOTES:

- \- Compound was not detected.
- U This compound should be considered "not-detected since it was detected in a blank at a similar level.
- R Unreliable result - Compound may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
- UL This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.

TCLP - TENTATIVELY IDENTIFIED COMPOUNDS - ESTIMATED CONCENTRATIONS -page 2
- NAPL DATA (TCLP) - ALL SOLIDS REPORTED ON A WET WEIGHT BASIS

ERM-North Central Sample Number	LO-205S-DNT	LO-2106S-DNT			
Laboratory Sample Number	21012-01T	21046-01T			
Remarks	Oil	Oil			
Units	ug/Kg	ug/Kg			
COMPOUNDS					
VOLATILE COMPONENTS					
Xylenes Isomers	120000 JN	880000 JN			
Saturated Hydrocarbons (Number of Peaks)	490000 (1) JN	870000 (1) JN			
C3-Substituted Cyclohexane	67000 JN				
Unsaturated Hydrocarbon (Number of Peaks)	210000 (2) JN				
C3-Substituted Cyclohexane	210000 JN				
C4-Substituted Cyclohexane	220000 JN				
C3-Alkylbenzenes (Number of Peaks)	916000 (5) JN	1400000 (3) JN			
Decahydronaphthalene	120000 JN				
Propylester Cyanic Acid		530000 JN			
Unknown Alcohols		570000 (2) JN			
Azido-2,3,3-trimethylbutane		620000 JN			
2-Octenal (E)		470000 JN			

NOTES:

- Compound was not detected.
- U This compound should be considered "not-detected since it was detected in a blank at a similar level.
- R Unreliable result - Compound may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
- UL This compound was not detected, but the quantitation limit is prob higher due to a low bias identifie during the quality assurance review.

TCLP EXTRACTABLE ORGANIC ANALYSIS - ANALYTICAL RESULTS - NAPL DATA (TCLP) -page 3

ERM-North Central Sample Number		LO-2055-DNT	LO-2106S-DNT		
Laboratory Sample Number		21012-01T	21046-01T		
Remarks		Oil	Oil		
Units		ug/Kg	ug/Kg		
SEMIVOLATILE COMPOUNDS	Quantitation Limit				
Pyridine	20000	R	R		
1,4-Dichlorobenzene	10000	R	R		
2-Methylphenol	10000	R	R		
4-Methylphenol	10000	R	R		
Hexachloroethane	10000	R	R		
Nitrobenzene	10000	R	R		
Hexachlorobutadiene	10000	R	R		
2,4,6-Trichlorophenol	10000	R	R		
2,4,5-Trichlorophenol	25000	R	R		
2,4-Dinitrotoluene	10000	R	R		
Hexachlorobenzene	10000	R	R		
Pentachlorophenol	25000	R	R		
Quantitation Limit Multiplier		100	100		
Date Sample Collected		2/18/92	2/19/92		
Date Received by Laboratory		2/19/92	2/20/92		
Date Sample Extracted		3/11/92	3/11/92		
Date of Analysis		3/18/92	3/17/92		
Instrument Used for Analysis		4500-R	4500-R		

NOTES:

- \- Compound was not detected.
- U This compound should be considered "not-detected since it was detected in a blank at a similar level.
- R Unreliable result - Compound may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
- UL This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.

TCLP - TENTATIVELY IDENTIFIED COMPOUNDS - ESTIMATED CONCENTRATIONS - NAPL DATA (TCLP) - ALL SOLIDS REPORTED ON A WET WEIGHT BASIS				-page 4	
ERM-North Central Sample Number	LO-205S-DNT	LO-2106S-DNT			
Laboratory Sample Number	21012-01T	21046-01T			
Remarks	Oil	Oil			
Units	ug/Kg	ug/Kg			
COMPOUNDS					
SEMIVOLATILE COMPONENTS		-			
Saturated Hydrocarbons (Number of Peaks)	75700000 (15) JN	86200000 (12) JN			
Unsaturated Hydrocarbon (Number of Peaks)	2300000 (1) JN	3200000 (1) JN			
1-Methylnaphthalene	3900000 JN	6800000 JN			
Oxygenated Hydrocarbon	2300000 JN				
Dimethyl-1,1'-biphenyl Isomer	2800000 JN	3500000 JN			
Ethylnaphthalene Isomer	4900000 JN	2600000 JN			
Dimethylnaphthalene Isomers	8100000 JN	16000000 JN			
Trimethylnaphthalene Isomers	10900000 JN	17800000 JN			
Substituted Cyclohexanes		2900000 JN			

NOTES:

- \- Compound was not detected.
- U This compound should be considered "not-detected since it was detected in a blank at a similar level.
- R Unreliable result - Compound may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
- UL This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.

TCLP EXTRACTABLE ORGANIC ANALYSIS - ANALYTICAL RESULTS - NAPL DATA (TCLP)						-page 5
ERM-North Central Sample Number		LO-2055-DNT	LO-2106S-DNT			
Laboratory Sample Number		21012-01T	21046-01T			
Remarks		Oil	Oil			
Units		ug/Kg	ug/Kg			
TCLP PESTICIDES	Quantitation Limit					NOTES:
alpha-BHC	49.5	UL	UL			- Compound was not detected.
beta-BHC	49.5					U This compound should be considered "not-detected since it was detected in a blank at a similar level.
delta-BHC	49.5					R Unreliable result - Compound may or may not be present in this sample.
gamma-BHC (Lindane)	49.5	UL	UL			J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
Heptachlor	49.5	UL	UL			UL This compound was not detected, but the quantitation limit is probably higher due to a low bias identified
Aldrin	49.5	UL	UL			
Heptachlor Epoxide	49.5					
Endosulfan I	49.5					
Dieldrin	95	UL	UL			
4,4'-DDE	95					
Endrin	95	UL	UL			
Endosulfan II	95					
4,4'-DDD	95					
Endosulfan Sulfate	95					
4,4'-DDT	95	UL	UL			
Methoxychlor	495					
Endrin Ketone	95					
Endrin Aldehyde	95					
alpha-Chlordane	49.5					
gamma-Chlordane	49.5					
Toxaphene	4950					

TCLP EXTRACTABLE ORGANIC ANALYSIS - ANALYTICAL RESULTS - MAPL DATA (TCLP) -page 6

ERM-North Central Sample Number		LO-2105S-ONT	LO-2106S-ONT		
Laboratory Sample Number		21012-01T	21046-01T		
Remarks		Oil	Oil		
Units		ug/Kg	ug/Kg		
AROCLORS	Quantitation Limit				
Aroclor-1016	950				
Aroclor-1221	1900				
Aroclor-1232	950				
Aroclor-1242	950	19000 J	34000		
Aroclor-1248	950				
Aroclor-1254	950				
Aroclor-1260	950	17000 J	21000		
Quantitation Limit Multiplier		20.0	20.0		
Date of Sample Collection		2/18/92	2/19/92		
Date Sample Received by Laboratory		2/19/92	2/20/92		
Date Sample Extracted		2/27/92	2/27/92		
Date of Sample Analysis		3/13/92	3/14/92		

NOTES:

- \- Compound was not detected.
- U This compound should be considered "not-detected since it was detected in a blank at a similar level.
- R Unreliable result - Compound may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
- UL This compound was not detected, but the quantitation limit is probably higher due to a low bias identified

VOLATILE ORGANIC ANALYSIS - ANALYTICAL RESULTS - MONITORING WELL DATA

ERM-North Central Sample Number		2T8-1	201S-FB	201S-GW	201D-GW	204S-GW	204S-GWDUP	202S-GW	204D-GW	205D-GW	207D-GW	2-TB2	208S-FB	208S-GW	208S-GWDUP
Laboratory Sample Number		200256-1	200256-2	200256-3	200256-4	200256-5	200256-6	200256-7	200256-8	200256-9	200256-10	200257-1	200257-2	200257-3	200257-4
Remarks															
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
VOLATILE COMPOUNDS	Quantitation Limit	Trip Blank	Field Blank				Duplicate of LO-204S-GW					Trip Blank	Field Blank		Duplicate of LO-208S-GW
Chloromethane	10														
Bromomethane	10														
Vinyl Chloride	10														
Chloroethane	10														
Methylene Chloride	10	8 J	8 J	10 U					10 U		10 U				
Acetone	10													UL	UL
Carbon Disulfide	10				R							R	R	R	R
1,1-Dichloroethene	10														
1,1-Dichloroethane	10														
Total 1,2-Dichloroethene	10														
Chloroform	10	6 J	3 J									4 J			
1,2-Dichloroethane	10														
2-Butanone	10				12 U							UL	UL	UL	UL
1,1,1-Trichloroethane	10														
Carbon Tetrachloride	10														
Bromodichloromethane	10														
1,1,2,2-Tetrachloroethane	10														
1,2-Dichloropropane	10														
trans-1,3-Dichloropropene	10														
Trichloroethene	10														
Dibromochloromethane	10														
1,1,2-Trichloroethane	10														
Benzene	10														

VOLATILE ORGANIC ANALYSIS - ANALYTICAL RESULTS - MONITORING WELL DATA

ERM-North Central Sample Number LO-	2TB-1	201S-FB	201S-GW	201D-GW	204S-GW	204S-GWDUP	202S-GW	204D-GW	205D-GW	202D-GW	2-TB2	208S-FB	208S-GW	208S-GWDUP
Laboratory Sample Number	200256-1	200256-2	200256-3	200256-4	200256-5	200256-6	200256-7	200256-8	200256-9	200256-10	200257-1	200257-2	200257-3	200257-4
Remarks														
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
VOLATILE COMPOUNDS / Quantitation Limit	Trip Blank	Field Blank				Duplicate of LO-204S-GW					Trip Blank	Field Blank		Duplicate of LO-208S-GW
cis-1,3-Dichloropropene 10														
Bromoform 10														
2-Hexanone 10				UL							UL	UL	UL	UL
4-Methyl-2-Pentanone 10													UL	UL
Tetrachloroethene 10														
Toluene 10														
Chlorobenzene 10														
Ethylbenzene 10														
Styrene 10														
Total Xylenes 10														
Quantitation Limit Multiplier	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Date of Sample Collection	2/17/92	2/17/92	2/17/92	2/17/92	2/17/92	2/17/92	2/17/92	2/17/92	2/17/92	2/17/92	2/18/92	2/18/92	2/18/92	2/18/92
Date Sample Received by Laboratory	2/18/92	2/18/92	2/18/92	2/18/92	2/18/92	2/18/92	2/18/92	2/18/92	2/18/92	2/18/92	2/19/92	2/19/92	2/19/92	2/19/92
Date of Sample Analysis	2/21/92	2/21/92	2/24/92	2/25/92	2/24/92	2/24/92	2/24/92	2/24/92	2/24/92	2/24/92	2/25/92	2/25/92	2/26/92	2/26/92
Instrument Used for Analysis	HP-4	HP-4	HP-4	HP-4	HP-4	HP-4	HP-4	HP-4	HP-4	HP-4	HP-3	HP-3	HP-3	HP-3

NOTES:

- Compound was not detected.
- U This compound should be considered "not-detected" since it was detected in a blank at a similar level.
- R Unreliable result - Compound may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
- UL This compound was not detected, but the quantitation limit is probably higher due to limitations identified during the quality assurance review.

EXTRACTABLE ORGANIC ANALYSIS - ANALYTICAL RESULTS - MONITORING WELL DATA

ERM-North Central Sample Number LO-		TB-1	201S-FB	201S-GW	201D-GW	204S-GW	204S-GWDUP	202S-GW	204D-GW	205D-GW	202D-GW	2-TB2	208S-FB	208S-GW	208S-GWDUP
Laboratory Sample Number		-	021008-0008	021008-0007	021008-0009	021008-0001	021008-0002	021008-0004	021008-0003	021008-0005	021008-0006		021008-0011	021008-0012	021008-0013
Remarks															
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
SEMIVOLATILE COMPOUNDS	Quantitation Limit	Trip Blank	Field Blank				Duplicate of LO-204S-GW					Trip Blank	Field Blank		Duplicate of LO-208S-GW
Phenol	10	NA					R					NA			
bis(2-Chloroethyl)ether	10	NA		UL			R					NA			
2-Chlorophenol	10	NA					R					NA			
1,3-Dichlorobenzene	10	NA		UL			R					NA			
1,4-Dichlorobenzene	10	NA		UL			R					NA			
Benzyl Alcohol	10	NA		UL			R					NA			
1,2-Dichlorobenzene	10	NA		UL			R					NA			
2-Methylphenol	10	NA					R					NA			
2,2'-Oxybis(1-Chloropropane)	10	NA		UL			R					NA			
4-Methylphenol	10	NA					R					NA			
N-Nitroso-di-n-Propylamine	10	NA		UL		2 R	2 R					NA			
Hexachloroethane	10	NA		UL			R					NA			
Nitrobenzene	10	NA		UL			R					NA			
Isophorone	10	NA		UL			R					NA			
2-Nitrophenol	10	NA					R					NA			
2,4-Dimethylphenol	10	NA					R					NA			
Benzoic Acid	50	NA					R					NA			
bis(2-Chloroethoxy)methane	10	NA		UL			R					NA			
2,4-Dichlorophenol	10	NA					R					NA			
1,2,4-Trichlorobenzene	10	NA		UL			R					NA			
Naphthalene	10	NA		UL			R					NA			
4-Chloroaniline	10	NA	UL	UL	UL	UL	R	UL	UL	UL	UL	NA	UL	UL	UL
Hexachlorobutadiene	10	NA		UL			R					NA			
4-Chloro-3-Methylphenol	10	NA					R					NA			
2-Methylnaphthalene	10	NA		UL			R					NA			

EXTRACTABLE ORGANIC ANALYSIS - ANALYTICAL RESULTS - MONITORING WELL DATA

ERM-North Central Sample Number	LO-	TB-1	201S-FB	201S-GW	201D-GW	204S-GW	204S-GWDUP	202S-GW	204D-GW	205D-GW	202D-GW	L-TB2	208S-FB	208S-GW	208S-GWDUP
Laboratory Sample Number		-	021008-0008	021008-0007	021008-0009	021008-0001	021008-0002	021008-0004	021008-0003	021008-0005	021008-0006	-	021008-0011	021008-0012	021008-0013
Remarks															
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
SEMIVOLATILE COMPOUNDS	Quantitation Limit	Trip Blank	Field Blank				Duplicate of LO-204S-GW					Trip Blank	Field Blank		Duplicate of LO-208S-GW
Hexachlorocyclopentadiene	10	NA		UL			R					NA			
2,4,6-Trichlorophenol	10	NA					R					NA			
2,4,5-Trichlorophenol	50	NA					R					NA			
2-Chloronaphthalene	10	NA		UL			R					NA			
2-Nitroaniline	50	NA		UL			R					NA			
Dimethylphthalate	10	NA		UL			R					NA			
Acenaphthylene	10	NA		UL			R					NA			
3-Nitroaniline	50	NA	UL	UL	UL	UL	R	UL	UL	UL	UL	NA	UL		UL
Acenaphthene	10	NA		UL			R					NA			
2,4-Dinitrophenol	50	NA					R					NA			
4-Nitrophenol	50	NA	UL	UL	UL	UL	R	UL	UL	UL	UL	NA		UL	
Dibenzofuran	10	NA		UL			R					NA			
2,4-Dinitrotoluene	10	NA		UL			R					NA			
2,6-Dinitrotoluene	10	NA		UL			R					NA			
Diethylphthalate	10	NA		UL			R					NA			
4-Chlorophenylphenylether	10	NA		UL			R					NA			
Fluorene	10	NA		UL			R					NA			
4-Nitroaniline	50	NA	UL	UL	UL	UL	R	UL	UL	UL	UL	NA	UL	UL	UL
4,6-Dinitro-2-Methylphenol	50	NA					R					NA			
N-Nitrosodiphenylamine	10	NA		UL			R					NA			
4-Bromophenylphenylether	10	NA		UL			R					NA			
Hexachlorobenzene	10	NA		UL			R					NA			
Pentachlorophenol	50	NA					R					NA			
Phenanthrene	10	NA		UL		1 J	R					NA			

EXTRACTABLE ORGANIC ANALYSIS - ANALYTICAL RESULTS - MONITORING WELL DATA

ERM-North Central Sample Number	LO-	2TB-1	201S-FB	201S-GW	201D-GW	204S-GW	204S-GWDUP	202S-GW	204D-GW	205D-GW	202D-GW	L-TB2	208S-FB	208S-GW	208S-GWDUP
Laboratory Sample Number		-	021888-0008	021888-0007	021888-0009	021888-0001	021888-0002	021888-0004	021888-0003	021888-0005	021888-0006		021888-0011	021888-0012	021888-0013
Remarks															
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
SEMIVOLATILE COMPOUNDS	Quantitation Limit	Trip Blank	Field Blank				Duplicate of LO-204S-GW					Trip Blank	Field Blank		Duplicate of LO-208S-GW
Anthracene	10	NA		UL			R					NA			
Carbazole	10	NA		UL			R					NA		UL	
Di-n-Butylphthalate	10	NA		UL			R	1 J			1 J	NA			
Fluoranthene	10	NA		UL			2 J					NA			
Pyrene	10	NA		UL			R					NA			
Butylbenzylphthalate	10	NA		UL			R					NA			
3,3'-Dichlorobenzidine	10	NA		UL			R	UL				NA		UL	
Benzo(a)anthracene	10	NA		UL			R					NA			
bis(2-Ethylhexyl)phthalate	10	NA	2 J	10 U			R	10 U		10 U	14 U	NA	2 J	10 U	
Chrysene	10	NA		UL			R					NA			
Di-n-Octylphthalate	10	NA		UL			R					NA			
Benzo(b)fluoranthene	10	NA		UL			R					NA			
Benzo(k)fluoranthene	10	NA		UL			R					NA			
Benzo(a)pyrene	10	NA		UL			R					NA			
Indeno(1,2,3-cd)pyrene	10	NA		UL			R					NA			
Dibenz(a,h)anthracene	10	NA		UL			R					NA			
Benzo(g,h,i)perylene	10	NA		UL			R					NA			
Quantitation Limit Multiplier		NA	1.00	1.00	1.00	1.00	1.20	1.00	1.00	1.00	1.00	NA	1.00	1.00	1.00
Date of Sample Collection		NA	2/17/92	2/17/92	2/17/92	2/17/92	2/17/92	2/17/92	2/17/92	2/17/92	2/17/92	NA	2/18/92	2/18/92	2/18/92
Date Sample Received by Laboratory		NA	2/18/92	2/18/92	2/18/92	2/18/92	2/18/92	2/18/92	2/18/92	2/18/92	2/18/92	NA	2/19/92	2/19/92	2/19/92
Date Sample Extracted		NA	2/21/92	2/21/92	2/21/92	2/21/92	3/17/92	2/21/92	2/21/92	2/21/92	2/21/92	NA	2/21/92	2/21/92	2/21/92
Date of Sample Analysis		NA	3/16/92	3/19/92	3/16/92	3/19/92	3/19/92	3/17/92	3/16/92	3/19/92	3/19/92	NA	3/19/92	3/17/92	3/19/92
Instrument Used for Analysis		NA	4500 U	4500 U	4500 U	4500 U	4500 U	4500 U	4500 U	4500 U	4500 U	NA	4500 U	4500 U	4500 U

CLP - TENTATIVELY IDENTIFIED COMPOUNDS - ESTIMATED CONCENTRATIONS - MONITORING WELL DATA

ERM-North Central Sample Number	LO-2TB-1	LO-201S-FB	LO-201S-GW	LO-201D-GW	LO-204S-GW	LO-204S-GWDUP	LO-202S-GW	LO-204D-GW	LO-205D-GW	LO-202D-GW	LO-TB2	LO-208S-FB	LO-208S-GW	LO-208S-GWDUP
Laboratory Sample Number (VOA)		200256-1	200256-2	200256-3	200256-4	200256-5	200256-6	200256-7	200256-8	200256-9	200256-10	200257-2	200257-3	200257-4
Laboratory Sample Number (BNA)	-	021000 -0008	021000 -0007	021000 -0009	021000 -0001	021000 -0002	021000 -0004	021000 -0003	021000 -0005	021000 -0006	-	021000 -0011	021000 0012	021000 -0013
Remarks														
Units	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
COMPOUNDS	Trip Blank	Field Blank				Duplicate of LO-204S-GW					Trip Blank	Field Blank		Duplicate of LO-208S-GW
VOLATILE COMPONENTS	-	-		-							-	-		
Unknowns (Number of Peaks)			49 J		110 J	110 J	5 J	65 J	56 J	24 J			250 J	270 J
SEMIVOLATILE COMPONENTS	NA										NA			
Blank Contamination		24 J	34 R	11 R	74 R	10 R	44 R	11 R		44 R				6 R
Laboratory Artifact		3 J												
Aliphatic Hydrocarbon		14 J	15 J				7 J		11 J	59 J		2 J	26 J	11 J
2-Butanone, 3,3-Dimethyl			48 JN		150 JN	180 JN				100 JN				
Aromatic Compounds		5 J	3 J		54 J	13 J		3 J		54 J				
Cyclohexanone										3 JN				
Alcohols		20 J			2 J	4 J				11 J				
Unknown Ketones		4 J												
Sulfur, Mol (S8)					7 JN	10 JN							6 JN	
Unknown Phenols					4 J									
Unknown Acids														2 J
Phthalate Esters														4 J
Unknowns		10 J	55 J	2 J	81 J	88 J	14 J	6 J	8 J	26 J			23 J	8 J

NOTES:

- \- Compound was not detected.
- U This compound should be considered "not-detected" since it was detected in a blank at a similar level.
- R Unreliable result - Compound may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
- UL This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.
- NA Not analyzed.

EXTRACTABLE ORGANIC ANALYSIS - ANALYTICAL RESULTS - MONITORING WELL DATA

ERM-North Central Sample Number		LO-TB-1	LO-2015-FB	LO-2015-GW	LO-2810-GW	LO-2845-GW	LO-2845-GWDUP	LO-2825-GW	LO-2840-GW	LO-2850-GW	LO-2820-GW	LO-2-TB2	LO-2685-FB	LO-2685-GW	LO-2685-GWDUP
Laboratory Sample Number		-	021888-0008	021888-0007	021888-0009	021888-0001	021888-0002	021888-0004	021888-0003	021888-0005	021888-0006		021888-0011	021888-0012	021888-0013
Remarks															
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
PESTICIDES	Quantitation Limit	Trip Blank	Field Blank				Duplicate of LO-2845-GW					Trip Blank	Field Blank		Duplicate of LO-2685-GW
alpha-BHC	0.05	NA										NA			UL
beta-BHC	0.05	NA										NA			UL
delta-BHC	0.05	NA										NA			UL
gamma-BHC (Lindane)	0.05	NA										NA	UL	UL	UL
Heptachlor	0.05	NA										NA			UL
Aldrin	0.05	NA										NA			UL
Heptachlor Epoxide	0.05	NA										NA			UL
Endosulfan I	0.05	NA										NA			UL
Dieldrin	0.10	NA										NA			UL
4,4'-DDE	0.10	NA										NA			UL
Endrin	0.10	NA										NA			UL
Endosulfan II	0.10	NA										NA			UL
4,4'-DDD	0.10	NA										NA			UL
Endosulfan Sulfate	0.10	NA										NA			UL
4,4'-DDT	0.10	NA										NA	UL	UL	UL
Methoxychlor	0.50	NA										NA			UL
Endrin Ketone	0.10	NA										NA			UL
Endrin Aldehyde	0.10	NA										NA			UL
alpha-Chlordane	0.50	NA										NA			UL
gamma-Chlordane	0.50	NA										NA			UL
Toxaphene	1.0	NA										NA			UL

EXTRACTABLE ORGANIC ANALYSIS - ANALYTICAL RESULTS - MONITORING WELL DATA

ERM-North Central Sample Number		LO-2TB-1	LO-201S-FB	LO-201S-GW	LO-201D-GW	LO-204S-GW	LO-204S-GWDUP	LO-202S-GW	LO-304D-GW	LO-205D-GW	LO2020-GW	LO-2-TB2	LO-208S-FB	LO-208S-GW	LO-208S-GWDUP
Laboratory Sample Number		-	021008-0008	021008-0007	021008-0009	021008-0001	021008-0002	021008-0004	021008-0003	021008-0005	021008-0006		021008-0011	021008-0012	021008-0013
Remarks															
Units		ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
AROCLORS	Quantitation Limit	Trip Blank	Field Blank				Duplicate of LO-204S-GW					Trip Blank	Field Blank		Duplicate of LO-208S-GW
Aroclor-1016	1.0	NA										NA			UL
Aroclor-1221	2.0	NA										NA			UL
Aroclor-1232	1.0	NA										NA			UL
Aroclor-1242	1.0	NA										NA			UL
Aroclor-1248	1.0	NA										NA			UL
Aroclor-1254	1.0	NA										NA			UL
Aroclor-1260	1.0	NA										NA			UL
Quantitation Limit Multiplier		NA	1.08	1.02	1.08	1.16	1.16	1.14	1.08	1.12	1.08	NA	1.06	1.06	1.06
Date of Sample Collection		NA	2/17/92	2/17/92	2/17/92	2/17/92	2/17/92	2/17/92	2/17/92	2/17/92	2/17/92	NA	2/18/92	2/18/92	2/18/92
Date Sample Received by Laboratory		NA	2/18/92	2/18/92	2/18/92	2/18/92	2/18/92	2/18/92	2/18/92	2/18/92	2/18/92	NA	2/19/92	2/19/92	2/19/92
Date Sample Extracted		NA	2/21/92	2/21/92	2/21/92	2/21/92	2/21/92	2/21/92	2/21/92	2/21/92	2/21/92	NA	2/21/92	2/21/92	2/21/92
Date of Sample Analysis		NA	3/6/92	3/5/92	3/6/92	3/5/92	3/5/92	3/5/92	3/5/92	3/5/92	3/5/92	NA	3/6/92	3/6/92	3/6/92

NOTES:

- Compound was not detected.
U This compound should be considered "not-detected" since it was detected in a blank at a similar level.
R Unreliable result - Compound may or may not be present in this sample.
J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
UL This compound was not detected, but the quantitation limit is probably higher due to limitations identified during the quality assurance review.
NA Not analyzed.

VOLATILE ORGANIC ANALYSIS - ANALYTICAL RESULTS - MONITORING WELL DATA

ERM-North Central Sample Number	LO-2106DR-6W	LO-2101L-6W	LO-2101M-6W	LO-2101O-6W	LO-2102L-6W	LO-2D-6W	LO-2035-6W	LO-2102O-6W	LO-2055-6W	LO-2065-6W	LO-2050-6W	LO-2035-FB	LO-2065-6W	LO-2035-6W	LO-2035-6WDUP	LO-2030-6W	LO-2084
Laboratory Sample Number	200257-5	200257-6	200257-7	200257-8	200257-9	200257-10	200257-11	200257-12	200257-13	200257-14	200257-15	200258-11	200258-2	200258-3	200258-4	200258-5	200258-6
Remarks									Analyzed Three Times				Analyzed Three Times				
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
VOLATILE COMPOUNDS	Quant. Limit											Field Blank			Duplicate of LO-2035-6W		Trip Blank
Chloromethane	10								-/ R/ R				UL/ R/ R				
Bromomethane	10								-/ R/ R				UL/ R/ R				
Vinyl Chloride	10	UL		UL		11 J	UL	UL	15 J -/ R/ R	UL	UL		UL/ R/ R				
Chloroethane	10	24							-/ R/ R				93 J/ 91 J/ 100 J				
Methylene Chloride	10	15 U		10 U				10 U	10 U -/ R/ R	10 U	10 U	4 J	12 U/ 99 U/ 10 U	10 U	10 U	10 U	4 J
Acetone	10		UL		UL				UL/ 24 J/ R				UL/ R/ R				
Carbon Disulfide	10	R	R	R	R	R	R	R	R R/ R/ R	R	R	R	UL/ R/ R	R	R	R	R
1,1-Dichloroethene	10					5 J			3 J -/ R/ R				4 J/ R/ 5 J				
1,1-Dichloroethane	10					60			58 14 / 12 J/ 12 J				3 J/ R/ 3 J				
Total 1,2-Dichloroethene	10					19			10 -/ R/ R				UL/ R/ R				
Chloroform	10								-/ R/ R				UL/ R/ R				4 J
1,2-Dichloroethane	10								-/ R/ R				UL/ R/ R				
2-Butanone	10	UL	UL	UL	UL	UL	UL	UL	UL UL/ R/ R	UL	UL	J	-/ R/ R		UL	UL	UL
1,1,1-Trichloroethane	10					110			62 -/ R/ R				UL/ R/ R				
Carbon Tetrachloride	10								-/ R/ R				UL/ R/ R				
Bromodichloromethane	10								-/ R/ R				UL/ R/ R				
1,1,2,2-Tetrachloroethane	10								-/ R/ R				UL/ R/ R				
1,2-Dichloropropane	10								-/ R/ R				UL/ R/ R				
trans-1,3-Dichloropropene	10								-/ R/ R				UL/ R/ R				
Trichloroethene	10								-/ R/ R				UL/ R/ R				
Dibromochloromethane	10								-/ R/ R				UL/ R/ R				
1,1,2-Trichloroethane	10								-/ R/ R				UL/ R/ R				
Benzene	10	10							-/ R/ R				270 J/ 340 J/ 330 J				

VOLATILE ORGANIC ANALYSIS - ANALYTICAL RESULTS - MONITORING WELL DATA

ERM-North Central Sample Number	LO-2106GR-GW	2101L-GW	2101M-GW	2101D-GW	202L-GW	207D-GW	207S-GW	202D-GW	205S-GW	206S-GW	206D-GW	203S-FB	2106S-GW	203S-GW	203S-GWDUP	203D-GW	LO-784
Laboratory Sample Number	200257-5	200257-6	200257 7	200257-8	200257-9	200257-10	200257-11	200257-1	200257-13	200257-14	200257-15	200258-1	200258-2	200258-3	200258-4	200258-5	200258-6
Remarks									Analyzed Three Times				Analyzed Three Times				
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
VOLATILE COMPOUNDS	Quant. Limit											Field Blank			Duplicate of LO-203S-GW		Trip Blank
cis-1,3-Dichloropropene	10								-/ R/ R				UL/ R/ R				
Bromoform	10								-/ R/ R				UL/ R/ R				
2-Hexanone	10	UL	UL	UL	UL	UL	UL	UL	UL/ R/ R	UL	UL	UL	UL/ R/ R		UL	UL	UL
4-Methyl-2-Pentanone	10		UL		UL				-/ R/ R				UL/ R/ R				
Tetrachloroethene	10								-/ R/ R				UL/ R/ R				
Toluene	10	4 J							-/ R/ R				130 J/ 160 J/ 130 J				
Chlorobenzene	10								-/ R/ R				UL/ R/ R				
Ethylbenzene	10								100 J/ 270 J/ 28 J				410 J/ 320 J/ 440 J				
Styrene	10								-/ R/ R				UL/ R/ R				
Total Xylenes	10								270 / 550 J/ 72 J				1800 J/ 1300 J/ 1900 J				
Quantitation Limit Multiplier		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00 / 1.00 / 5.00	1.00	1.00	1.00	1.00 / 10.0 / 1.00	1.00	1.00	1.00	1.00
Date of Sample Collection		2/18/92	2/18/92	2/18/92	2/18/92	2/18/92	2/18/92	2/18/92	2/18/92	2/18/92	2/18/92	2/19/92	2/19/92	2/19/92	2/19/92	2/19/92	2/19/92
Date Sample Received by Laboratory		2/19/92	2/19/92	2/19/92	2/19/92	2/19/92	2/19/92	2/19/92	2/19/92	2/19/92	2/19/92	2/20/92	2/20/92	2/20/92	2/20/92	2/20/92	2/20/92
Date of Sample Analysis		2/27/92	2/27/92	2/27/92	2/27/92	2/27/92	2/27/92	2/27/92	2/27/92	2/28 / 3/10 / 3/12	2/27/92	2/27/92	2/25/92	2/24 / 3/10 / 3/10	2/24/92	2/25/92	2/25/92	2/25/92
Instrument Used for Analysis		HP-4	HP-3	HP-4	HP-3	HP-4	HP-4	HP-4	HP-4	HP-3 / HP-4 / HP-4	HP-4	HP-4	HP-4	HP-4 / HP-4 / HP-4	HP-4	HP-4	HP-4	HP-4

NOTES:

- Compound was not detected.
- U This compound should be considered "not-detected" since it was detected in a blank at a similar level.
- R Unreliable result - Compound may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review.
- UL This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.

EXTRACTABLE ORGANIC ANALYSIS - ANALYTICAL RESULTS - MONITORING WELL DATA

ERM-North Central Sample Number	LO-203DR-GW	LO-211I-GW	LO-210M-GW	LO-210D-GW	LO-212L-GW	LO-207D-GW	LO-207S-GW	LO-210D-GW	LO-205S-GW	LO-206S-GW	LO-205D-GW	LO-203S-FB	LO-206S-GW	LO-205 GW	LO-203S-GWDUP	LO-203D-GW	LO-204
Laboratory Sample Number	021008-0014	021008-0005	021008-0006	021008-0007	021008-0008	021008-0009	021008-0010	021008-0001	021008-0002	021008-0003	021008-0004	021047-0001	021047-0002	021047-0003	021047-0004	021047-0005	
Remarks																	
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
SEMIVOLATILE COMPOUNDS	Quant. limit											Field Blank			Duplicate of LO-203S-GW		Trip Blank
Phenol	10		NA														NA
bis(2-Chloroethyl)ether	10		NA	UL	UL				UL	UL	UL	UL					NA
2-Chlorophenol	10		NA														NA
1,3-Dichlorobenzene	10		NA														NA
1,4-Dichlorobenzene	10		NA														NA
1,2-Dichlorobenzene	10		NA														NA
2-Methylphenol	10		NA														NA
2,2'-oxybis(1-chloropropane)	10		NA	UL	UL				UL	UL	UL	UL					NA
4-Methylphenol	10		NA	UL													NA
N-Nitroso-di-n-Propylamine	10		NA	UL	UL				UL	UL	UL	UL					NA
Hexachloroethane	10		NA														NA
Nitrobenzene	10		NA														NA
Isophorone	10		NA	UL	UL				UL	UL	UL	UL					NA
2-Nitrophenol	10		NA														NA
2,4-Dimethylphenol	10		NA														NA
bis(2-Chloroethoxy)methane	10		NA	UL	UL				UL	UL	UL	UL					NA
2,4-Dichlorophenol	10		NA														NA
1,2,4-Trichlorobenzene	10		NA														NA
Naphthalene	10		NA							800 J			460 J				NA
4-Chloroaniline	10	UL	NA			UL	UL	UL									NA
Hexachlorobutadiene	10		NA														NA
4-Chloro-3-Methylphenol	10		NA														NA
2-Methylnaphthalene	10		NA							4000			1800				NA

EXTRACTABLE ORGANIC ANALYSIS - ANALYTICAL RESULTS - MONITORING WELL DATA -page 1.

ERM-North Central Sample Number	LO	2105DR-GW	2101L-GW	2101M-GW	2101D-GW	2102L-GW	207D-GW	207S-GW	2102D-GW	205S-GW	2065-GW	206D-GW	203S FB	2105S-GW	203S-GW	203S-GWDUP	203D-GW	2-TB4
Laboratory Sample Number		021008 -0014	021008 0005	021008 -0006	021008 -0007	021008 -0008	021008 -0009	021008 -0010	021008 -0001	021008 0002	021008 0003	021008 -0004	021047 -0001	021047 0002	021047 -0003	021047 -0004	021047 0005	-
Remarks																		
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
SEMIVOLATILE COMPOUNDS	Quant. Limit												Field Blank			Duplicate of LO-203S-GW		Trip Blank
Hexachlorocyclopentadiene	10		NA															NA
2,4,6-Trichlorophenol	10		NA															NA
2,4,5-Trichlorophenol	25		NA															NA
2-Chloronaphthalene	10		NA															NA
2-Nitroaniline	25		NA	UL	UL				UL	UL	UL	UL						NA
Dimethylphthalate	10		NA															NA
Acenaphthylene	10		NA															NA
3-Nitroaniline	25		NA			UL	UL	UL										NA
Acenaphthene	10		NA											72 J				NA
2,4-Dinitrophenol	25		NA															NA
4-Nitrophenol	25	UL	NA															NA
Dibenzofuran	10		NA											76 J				NA
2,4-Dinitrotoluene	10		NA															NA
2,6-Dinitrotoluene	10		NA															NA
Diethylphthalate	10	J	NA															NA
4-Chlorophenylphenylether	10		NA															NA
Fluorene	10		NA							420 J				120 J				NA
4-Nitroaniline	25	UL	NA			UL	UL	UL										NA
4,6-Dinitro-2-Methylphenol	25		NA															NA
N-Nitrosodiphenylamine	10		NA															NA
4-Bromophenylphenylether	10		NA															NA
Hexachlorobenzene	10		NA															NA
Pentachlorophenol	25		NA															NA
Phenanthrene	10		NA							1000 J				340 J				NA

ERM-North Central Sample Number	LO-2106DR-GW	2101L-GW	2101N-GW	2101O-GW	2102L-GW	203D GW	207S-GW	2102D-GW	205S-GW	206S-GW	206D-GW	203S-FB	2106S-GW	203S-GW	203S-GWDUP	203D-GW	2 TB4
Laboratory Sample Number	021008 -0014	021008 -0005	021008 -0006	021008 -0007	021008 -0008	021008 -0009	021008 -0010	021008 -0001	021008 -0002	021008 0003	021008 -0004	021047 -0001	021047 -0002	021047 -0003	021047 -0004	021047 -0005	
Remarks																	
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
SEMIVOLATILE COMPOUNDS	Quant. Limit											Field Blank			Duplicate of LO-203S-GW		Trip Blank
Anthracene	10		NA														NA
Carbozole	10	UL	NA														NA
Di-n-Butylphthalate	10	10 U	NA	10 U			10 U	10 U							1 J	1 J	NA
Fluoranthene	10		NA														NA
Pyrene	10		NA														NA
Butylbenzylphthalate	10		NA														NA
3,3'-Dichlorobenzidine	10	UL	NA														NA
Benzo(a)anthracene	10		NA														NA
bis(2-Ethylhexyl)phthalate	10		NA	10 U		10 U	10 U	10 U	10 U	2000 U		5 J	500 U		10 U	10 U	NA
Chrysene	10		NA														NA
Di-n-Octylphthalate	10		NA														NA
Benzo(b)fluoranthene	10		NA														NA
Benzo(k)fluoranthene	10		NA														NA
Benzo(a)pyrene	10		NA														NA
Indeno(1,2,3-cd)pyrene	10		NA														NA
Dibenz(a,h)anthracene	10		NA														NA
Benzo(g,h,i)perylene	10		NA														NA
Quantitation Limit Multiplier	1.00	NA	1.00	1.00	1.00	1.00	1.00	1.00	200	1.00	1.00	1.00	50	1.00	1.00	1.00	NA
Date of Sample Collection	2/18/92	2/18/92	2/18/92	2/18/92	2/18/92	2/18/92	2/18/92	2/18/92	2/18/92	2/18/92	2/18/92	2/19/92	2/19/92	2/19/92	2/19/92	2/19/92	NA
Date Sample Received by Laboratory	2/19/92	2/19/92	2/19/92	2/19/92	2/19/92	2/19/92	2/19/92	2/19/92	2/19/92	2/19/92	2/19/92	2/20/92	2/20/92	2/20/92	2/20/92	2/20/92	NA
Date Sample Extracted	2/21/92	NA	2/21/92	2/21/92	2/21/92	2/21/92	2/21/92	2/21/92	2/21/92	2/21/92	2/21/92	2/22/92	2/22/92	2/22/92	2/22/92	2/22/92	NA
Date of Sample Analysis	3/17/92	NA	3/16/92	3/16/92	3/19/92	3/19/92	3/19/92	3/16/92	3/16/92	3/16/92	3/16/92	3/17/92	3/17/92	3/19/92	3/17/92	3/17/92	NA
Instrument Used for Analysis	4500 U	NA	4500 R	4500 R	4500 U	4500 U	4500 U	4500 R	4500 R	4500 R	4500 R	4500 R	4500 R	4500 R	4500 R	4500 R	NA

CLP - TENTATIVELY IDENTIFIED COMPOUNDS - ESTIMATED CONCENTRATIONS - MONITORING WELL DATA

ERM-North Central Sample Number LO-	2106OR-GW	2101L-GW	2101M-GW	2101O-GW	2102L-GW	2070-GW	207S-GW	2102O-GW	205S-GW	206S-GW	206O-GW	203S-FB	206S-GW	203S-GW	203S-GWDUP	203O-GW	2-TB4
Laboratory Sample Number	200257-5	200257-6	200257-7	200257-8	200257-9	200257-10	200257-11	200257-12	200257-13	200257-14	200257-15	200258-1	200258-2	200258-3	200258-4	200258-5	
Laboratory Sample Number	021008	021008	021008	021008	021008	021008	021008	021008	021008	021008	021008	021047	021047	021047	021047	021047	-
	-0014	0005	-0006	-0007	-0008	0009	-0010	-0011	-0002	-0003	-0004	-0001	-0002	-0003	-0004	-0005	
Remarks																	
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
COMPOUNDS									VOAs Analyzed Three Times			Field Blank	VOAs Analyzed Three Times		Duplicate of LO-203S-GW		Trip Blank
VOLATILE COMPONENTS				-								-					
Blank Contamination	12 R		7 R		23 R	12 R	12 R	7 R	-/ -/ 41 R	5 R	5 R						
Cycloalkanes									270 J/ 390 J/ -				24 J/ - / 36 J				
Alkanes									54 J/ 110 J/ -				300 J/ 72 J/220 J				
Substituted Benzene														950 J			
Unknowns		6 J					14 J		420 J/ 25 J/ 32 J		16 J		160 J/ 810 J/150 J	46 J		12 J	6 J
SEMIVOLATILE COMPONENTS		NA		-													NA
Blank Contamination					16 R	6 R		17 R				7 R		23 R	24 R	11 R	
Benzene-ethenyl	24 JN																
Hexanoic acid 2-ethyl					2 JN		4 JN	19 J									
Oxygenated hydrocarbons	39 J									2 J							
Cyclohexane isomers									-/ 4000 J/ -								
Dimethylnaphthalene isomers									-/ 21000 J/ -				-/ 5500 J/ -				
Trimethylnaphthalene isomers									-/ 19000 J/ -				-/ 1800 J/ -				
Biphenyl compounds									-/ 13000 J/ -				-/ 910 J/ -				
Aromatic compounds	11 J		3 J						-/ 9200 J/ -				-/ 3500 J/ -				
Alkanes	17 J		19 J		43 J	10 J	18 J	140 J	-/120000 J/ -	5 J	7 J	3 J	-/28000 J/ -	60 J	31 J	2 J	
Unknown acids	11 J																
Unknowns	59 J		12 J		9 J		19 J	2 J			10 J		-/ 46 J/	24 J	11 J	4 J	

EXTRACTABLE ORGANIC ANALYSIS - ANALYTICAL RESULTS - MONITORING WELL DATA

ERM-North Central Sample Number	LO-	21060R-GW	21011-GW	2101N-GW	21010-GW	2102L-GW	2070-GW	2075-GW	2102D-GW	2055-GW	2065-GW	2060-GW	2035-FB	2106S-GW	2035-GW	2035-GWDUP	2030-GW	LO-TB4
Laboratory Sample Number		821008 -0014	821008 -0005	821008 -0006	821008 -0007	821008 -0008	821008 -0009	821008 -0010	821008 -0001	821008 -0002	821008 -0003	821008 -0004	821047 -0001	821047 -0002	821047 -0003	821047 -0004	821047 -0005	
Remarks																		
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
PESTICIDES	Quant. Limit												Field Blank			Duplicate of LO-2035-GW		Trip Blank
alpha-BHC	0.05	UL	UL	UL	UL	UL	UL	UL		UL	UL	UL						NA
beta-BHC	0.05	UL		UL				UL				UL						NA
delta-BHC	0.05	UL		UL				UL				UL						NA
gamma-BHC (Lindane)	0.05	UL	UL	UL	UL	UL	UL	UL	UL	UL	UL	UL						NA
Heptachlor	0.05	UL		UL				UL				UL						NA
Aldrin	0.05	UL		UL				UL				UL						NA
Heptachlor Epoxide	0.05	UL		UL				UL				UL						NA
Endosulfan I	0.05	UL		UL				UL				UL						NA
Dieldrin	0.10	UL		UL				UL				UL						NA
4,4'-DDE	0.10	UL		UL				UL				UL						NA
Endrin	0.10	UL		UL				UL				UL						NA
Endosulfan II	0.10	UL		UL				UL				UL						NA
4,4'-DDD	0.10	UL		UL				UL				UL						NA
Endosulfan Sulfate	0.10	UL		UL				UL				UL						NA
4,4'-DDT	0.10	UL	UL	UL	UL	UL	UL	UL	UL	UL	UL	UL						NA
Methoxychlor	0.50	UL		UL				UL				UL						NA
Endrin Ketone	0.10	UL		UL				UL				UL						NA
Endrin Aldehyde	0.10	UL		UL				UL				UL						NA
alpha-Chlordane	0.50	UL		UL				UL				UL						NA
gamma-Chlordane	0.50	UL		UL				UL				UL						NA
Toxaphene	1.0	UL		UL				UL				UL						NA

INORGANIC ANALYSIS - ANALYTICAL RESULTS - TOTAL MONITORING WELL DATA

ERM-North Central Sample Number		LO-2065-GW	LO-2065-GW	LO-2060-GW	LO-203S-FB	LO-2065-GW	LO-203S-GW	LO-203S-GWDUP	LO-203D-GW
Laboratory Sample Number		#2126-01S	#2126-02S	#2126-03S	#2126-04S	#2126-05S	#2126-06S	#2126-07S	#2126-08S
Remarks		Total	Total	Total	Total	Total	Total	Total	Total
Sample Delivery Group		212601	212601	212601	212601	212601	212601	212601	212601
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
INORGANIC ELEMENTS	Detection Limit				Field Blank			Duplicate of LO-203S-GW	
Aluminum	P 66.0	47000 J	7050	1280		3320	11400 J	15100 J	371
Antimony	P 31.0	UL	UL	UL	UL	UL	UL	UL	UL
Arsenic	F 2.0	44.8 J	7.7 J	4.6 J	UL	23.6 J	41.7 J	43.4 J	5.4 J
Barium	P 1.0	1410 J	43.7	46.6		468	81.5	92.4	30.7
Beryllium	P 1.0	2.2 J							
Cadmium	P 1.0	1.6 J	1.1 J	UL	UL	UL	UL	UL	UL
Calcium	P 92.0	955000 J	150000	217000	226	166000	234000	252000	186000
Chromium	P 2.0	82.2 J	32.1	5.5		24.9	28.2	32.2	6.6
Cobalt	P 3.0	55 J	3.7				18.3	19.6	
Copper	P 3.0	76.7 J	102	4		13.7	30.3	33.8	
Iron	P 35.0	127000 J	19300	8140		7430	42700	48000	2970
Lead	F 2.0	532 J	26.3	6.2 U	2.2	564	31	35.7	3.6 U
Magnesium	P 69.0	544000 J	75400	114000	82.7	86100	130000	142000	96500
Manganese	P 1.0	3920 J	386	206	UL	167	614	686	57.9
Mercury	C 0.20	0.57 J				0.38 R	0.24 J		
Nickel	P 4.0	85.8 J	24.6	4.7		19.6	50.7	58.1	5.3
Potassium	P 76.0	27600 J	7110	5960		25000	5420 J	6670 J	4360
Selenium	F 4.0	UL (5x)		UL				UL	UL
Silver	P 5.0	30.6 J	UL	8	UL	6	UL	UL	9.4
Sodium	P 34.0	170000 J	24900	87900	130	249000	22500	20500 J	44600
Thallium	F 3.0	UL	UL	UL		UL (5x)	UL		UL
Vanadium	P 3.0	79.8 J	15.4	3.5		13	22.1	24.2	
Zinc	P 11.0	168 J	44.6 J	UL	UL	75.3 J	99.5	108	21.9 J
Cyanide	AS 10.0							(1.7x)	

NOTES:

- Analyte was not detected.
- U This analyte should be considered "not-detected" since it was detected in a blank at a similar level.
- R Unreliable result - Analyte may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review.
- UL This analyte was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.
- NA Not analyzed.
- (#x) This element was analyzed for, but not detected; however, due to sample dilutions, the reported detection limit is equal to the "normal" detection limit multiplied by the factor in parentheses.

ANALYTICAL METHOD:

- P - Inductively Coupled Plasma
- F - Graphite Furnace Atomic Absorption
- CV - Cold Vapor Atomic Absorption
- AS - Auto Analyzer

INORGANIC ANALYSIS - ANALYTICAL RESULTS - FILTERED MONITORING WELL DATA

ERM-North Central Sample Number		LO-205S-GW	LO-206S-GW	LO-206D-GW	LO-203S-FB	LO-2106S-GW	LO-203S-GW	LO-203S-GWDUP	LO-203D-GW
Laboratory Sample Number		02128-01S	02128-02S	02128-03S	02128-04S	02128-053S	02128-06S	02128-07S	02128-08S
Remarks		Filtered	Filtered	Filtered	Filtered	Filtered	Filtered	Filtered	Filtered
Sample Delivery Group		212801	212801	212801	212801	212801	212801	212801	212801
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
INORGANIC ELEMENTS	Detection limit				Field Blank			Duplicate of LO-203S-GW	
Aluminum	P 66.0								
Antimony	P 31.0								
Arsenic	F 2.0	52 J	2.4 J	2.6 J			3.3 J		3.9 J
Barium	P 1.0	230	14.9	37.2		182	14.9	14.9	29.8
Beryllium	P 1.0	1.6 U	UL	UL	UL	UL	UL	UL	UL
Cadmium	P 1.0								
Calcium	P 92.0	186000	74400	149000	237	123000	92000	94000	186000
Chromium	P 2.0	UL	UL	UL	UL	UL	UL	UL	UL
Cobalt	P 3.0								
Copper	P 3.0		12.6 U						
Iron	P 35.0	12800	38.8	2470		367			2140
Lead	F 2.0	2.8 U	2 U		1.6 J	2.4 U	1.4 U	1.7 U	1 U
Magnesium	P 69.0	51900	30500	75400		60700	44600	45900	97600
Manganese	P 1.0	382	35.4	48.3	3.1	42.2	12.7 U	15.8	37.5
Mercury	C 0.20					0.86 R			
Nickel	P 4.0	9.4 U					8.9 U	7.1 U	
Potassium	P 76.0	2420	5370	5200	199	25600	2060	2200	4550
Selenium	F 4.0	UL	UL	UL	UL	UL			UL
Silver	P 5.0								
Sodium	P 34.0	170000	24800	83900	491	264000	24200	26400 J	48200
Thallium	F 3.0	UL		UL					
Vanadium	P 3.0								
Zinc	P 11.0			13.8 U	14.8				
Cyanide	AS 10.0	NA	NA	NA	NA	NA	NA	NA	NA

NOTES:

- \- Analyte was not detected.
- U This analyte should be considered "not-detected" since it was detected in a blank at a similar level.
- R Unreliable result - Analyte may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review.
- UL This analyte was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.
- NA Not analyzed.
- (#x) This element was analyzed for, but not detected; however, due to sample dilutions, the reported detection limit is equal to the "normal" detection limit multiplied by the factor in parentheses.

ANALYTICAL METHOD:

- P - Inductively Coupled Plasma
- F - Graphite Furnace Atomic Absorption
- CV - Cold Vapor Atomic Absorption
- AS - Auto Analyzer

INORGANIC ANALYSIS ANALYTICAL RESULTS - TOTAL MONITORING WELL DATA

ERM-North Central Sample Number		LO-208S-GW	LO-208S-GWDUP	LO-2106-OR-GW	LO-2101L-GW	LO-2101M-GW	LO-2101O-GW	LO-2102L-GW	LO-2070-GW	LO-207S-GW	LO-2102O-GW
Laboratory Sample Number		02125-11S	02125-12S	02125-13S	02125-14S	02125-15S	02125-16S	02125-17S	02125-18S	02125-19S	02125-20S
Remarks		Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
Sample Delivery Group		212501	212501	212501	212501	212501	212501	212501	212501	212501	212501
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
INORGANIC ELEMENTS	Detection Limit		Duplicate of LO-208S-GW								
Aluminum	P	20.0	13500 J	9300 J	1900 J	940 J	22700 J	731 J	1730 J	1030 J	5280 J	434 J
Antimony	P	8.0	UL	UL	UL	UL	UL	UL	UL	UL	UL	UL
Arsenic	F	2.0	10.5 J	8.4 J	R	R	3.3 J	R	18.2 J	2.1 J	6.9 J	10.7 J
Barium	P	4.0	178 J	160 J	117	23.4	126 J	28.4	53	38.2	123 J	51.8
Beryllium	P	1.0	2.6 U	2.1 U	UL	UL	1.6 U	UL	UL	UL	UL	UL
Cadmium	P	1.0	UL	UL		2.1 U	UL	1.3 U			UL	
Calcium	P	39.0	549000 J	437000 J	161000	116000	637000 J	115000	184000	174000	361000 J	127000
Chromium	P	4.0	38.2 J	25.7 J	UL	UL	38.9 J	UL	13.2 J	UL	17.1 J	42.2
Cobalt	P	3.0	22.4 J	19.5 J			34.4 J	9.8	4		9.8 J	
Copper	P	3.0	56.2 J	44.6 J	3.2		82.9 J	3.4	12.4	3.7	16.6 J	9.2
Iron	P	11.0	37500 J	27900 J	4780	3080	101000 J	2060	10500	3840	16800 J	5570
Lead	F	1.0	86.5 J	54 J	4.9 U	3.7 U	25.4 U	3 U	8.7 U	4.3 U	10.4 U	6 U
Magnesium	P	49.0	313000 J	239000 J	75300	59900	393000 J	60100	99700	92400	198000 J	64700
Manganese	P	1.0	1280 J	1070 J	172	42.4	2810 J	39.7	362	92.3	452 J	182
Mercury	C	0.20	UL	UL			UL				UL	
Nickel	P	4.0	51.6 J	43 J	6.4		76.3 J		14.9		20.4 J	15.8
Potassium	P	130	9950 J	8840 J	14300 J	3550 J	11300 J	3650 J	6080 J	4300 J	7600 J	5190 J
Selenium	F	4.0	R (5x)	R	R	R	R (5x)	R	R	R	R (5x)	R
Silver	P	2.0	UL	UL	UL	UL	UL	UL	UL	UL	UL	UL
Sodium	P	38.0	145000 J	145000 J	154000 J	8380 J	6420 J	18400	137000	80000	478000 J	139000
Thallium	F	2.0	UL	UL	UL	UL	UL	UL	UL	UL	UL	UL
Vanadium	P	2.0	30.3 J	21.4 J	3.8 U	2.3 U	45.4 J	3.4 U	7.8 U	4.3 U	14.3 U	4.1 U
Zinc	P	4.0	125 J	109 J	23.5 U	16.6 U	268 J	13.5 U	26.6 U	15.6 U	48 J	15.3 U
Cyanide	AS	10.0	UL	UL	UL	UL	UL	UL	UL	UL	UL	UL

NOTES:

- \- Compound was not detected.
- U This compound should be considered "not-detected" since it was detected in a blank at a similar level.
- R Unreliable result - Compound may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review.
- UL This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.
- NA Not analyzed.
- (5x) This element was analyzed for, but not detected; however, due to sample dilutions, the reported detection limit is equal to the "normal" detection limit multiplied by the factor in parentheses.

ANALYTICAL METHOD:

- P - Inductively Coupled Plasma
- F - Graphite Furnace Atomic Absorption
- CV - Cold Vapor Atomic Absorption
- AS - Auto Analyzer

INORGANIC ANALYSIS - ANALYTICAL RESULTS - FILTERED MONITORING WELL DATA — Page 4

ERM-North Central Sample Number		CO-208S-GW	CO-208S-GWDUP	CO-21060R-GW	CO-2101L-GW	CO-2101M-GW	CO-2101O-GW	CO-2102L-GW	CO-207O-GW	CO-207S-GW	CO-2102O-GW
Laboratory Sample Number		02127-11S	02127-12S	02127-13S	02127-14S	02127-15S	02127-16S	02127-17S	02127 18S	02127-19S	e2127-20S
Remarks		Filtered	Filtered	Filtered	Filtered	Filtered	Filtered	Filtered	Filtered	Filtered	Filtered
Sample Delivery Group		212701	212701	212701	212701	212701	212701	212701	212701	212701	212701
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
INORGANIC ELEMENTS	Detection Limit		Duplicate of CO-208S-GW								
Aluminum	P	66.0	68.4	88.3 J							
Antimony	P	31.0		UL							
Arsenic	F	2.0	3	UL					7.5 J		7
Barium	P	1.0	66.5 J	66.7 J	113 J	19.2 J	17.6 J	27.4 J	41.6 J	32.6 J	96.2 J	45.9 J
Beryllium	P	1.0		UL								
Cadmium	P	1.0		UL	1							
Calcium	P	92.0	147000	147000 J	134000	122000	111000	119000	116000	170000	220000	112000
Chromium	P	2.0	3 U	UL			2.2 U					
Cobalt	P	3.0	3.7	UL				8.2				
Copper	P	3.0		UL			5.1					
Iron	P	35.0	642 J	246 J	1450 J	814 J		1050 J	497 J	1670 J	536 J	1820 J
Lead	F	2.0	1.7 U	3.1 U	1.6 U	2.8 U	1.7 U	2.3 U	2.2 U	2.8 U	1.5 U	2 U
Magnesium	P	69.0	75800	76500 J	56300	63600	57400	61300	59200	88400	112000	56700
Manganese	P	1.0	125	141 J	75.3	23.4	8.9 U	30.6	152	48.8	49.2	112
Mercury	C	0.20		UL								
Nickel	P	4.0	11.4	18.9 J	4.5	4.2	4.8		4.5		4.8	6.3
Potassium	P	76.0	5050	4620 J	14800	3920	2110	3440	5770	4110	5530	5460
Selenium	F	4.0	UL	UL	UL	UL	UL	UL		UL	UL	UL
Silver	P	5.0		UL							7	
Sodium	P	34.0	164000 J	157000 J	172000 J	9350 J	5890	10800	147000	86500	495000	147000
Thallium	F	3.0	R	R	R	R	R	R	R	R	R	R
Vanadium	P	3.0		UL								
Zinc	P	11.0		UL								
Cyanide	AS	10.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

NOTES:

- \- Analyte was not detected.
- U This analyte should be considered "not-detected" since it was detected in a blank at a similar level.
- R Unreliable result - Analyte may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review.
- UL This analyte was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.
- NA Not analyzed.
- (8x) This element was analyzed for, but not detected; however, due to sample dilutions, the reported detection limit is equal to the "normal" detection limit multiplied by the factor in parentheses.

ANALYTICAL METHOD:

- P - Inductively Coupled Plasma
- F - Graphite Furnace Atomic Absorption
- CV - Cold Vapor Atomic Absorption
- AS - Auto Analyzer

INORGANIC ANALYSIS - ANALYTICAL RESULTS - TOTAL MONITORING WELL DATA

ERM-North Central Sample Number		LO-201S-FB	LO-201S-GW	LO-201D-GW	LO-204S-GW	LO-204S-GWDUP	LO-204D-GW	LO-202S-GW	LO-205D-GW	LO-202D-GW	LO-208S-FB
Laboratory Sample Number		02125-01S	02125-02S	02125-03S	02125-04S	02125-05S	02125-06S	02125-07S	02125-08S	02125-09S	02125-10S
Remarks		Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
Sample Delivery Group		212501	212501	212501	212501	212501	212501	212501	212501	212501	212501
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
INORGANIC ELEMENTS	Detection Limit	Field Blank				Duplicate of LO-204S-GW					Field Blank
Aluminum	P 20.0		68700 J	233 J	11900 J	20500 J	4940 J	34500 J	863 J	1840 J	
Antimony	P 8.0	UL	UL	UL	UL	UL	UL	UL	UL	13.2 J	UL
Arsenic	F 2.0	R	35.7 J	3.1 J	47.1 J	92 J	5.1 J	8.5 J	R	3 J	R
Barium	P 4.0		481 J	32	115 J	150 J	72.7	194 J	85.1	64.1 J	
Beryllium	P 1.0	1 J	2.6 U	UL	2.6 U	1.6 U	UL	1.6 U	UL	UL	UL
Cadmium	P 1.0		UL		UL	1.2 U		UL		1 U	
Calcium	P 39.0	192	1020000 J	177000	383000 J	552000 J	246000	542000 J	167000	197000 J	251
Chromium	P 4.0	UL	117 J	UL	25.7 J	39.5 J	4 J	107 J	UL	7.2 J	UL
Cobalt	P 3.0		91.8 J		16.1 J	24.7 J	6.3	43 J		4.6 J	
Copper	P 3.0		212 J		42 J	80.4 J	10.1	126 J	3.3	16 J	
Iron	P 11.0		192000 J	3000	40200 J	59400 J	10200	129000 J	5520	6120 J	
Lead	F 1.0	5.1 J	126 J	4.5 U	112 J	173 J	11.4 U	55.4 J	5.8 U	4.6 U	2 J
Magnesium	P 49.0	83.8	597000 J	96600	329000 J	446000 J	137000	312000 J	87600	104000 J	132
Manganese	P 1.0		4650 J	86	1170 J	1570 J	263	1780 J	194	161 J	
Mercury	CV 0.20		0.31 J		UL	UL		UL		UL	
Nickel	P 4.0		164 J		42.2 J	72.4 J	8.9	104 J	4.3	14.9 J	
Potassium	P 130		20400 J	3880 J	49700 J	54100 J	7320 J	14200 J	8940 J	6050 J	
Selenium	F 4.0	R	R	R	R (5x)	R (5x)	R	R (5x)	R	R	R
Silver	P 2.0	UL	UL	UL	UL	UL	UL	UL	UL	UL	UL
Sodium	P 38.0	162	252000 J	31300	803000 J	790000 J	153000	190000 J	102000	84600 J	281
Thallium	F 2.0	UL	UL	UL	UL (5x)	UL (5x)	UL	UL	UL	UL	UL
Vanadium	P 2.0		130 J	4.2 U	33.2 J	48.9 J	8.9 U	80.8 J	5.8 U	6.5 U	
Zinc	P 4.0	9 J	386 J	11.8 U	251 J	364 J	37 U	301 J	13.1 U	31.3 U	6.1 J
Cyanide	AS 10.0	UL	UL (1.7x)	UL	44.9 J	43.7 J	UL	UL	UL	UL	UL

NOTES:

- \- Analyte was not detected.
- U This analyte should be considered "not-detected" since it was detected in a blank at a similar level.
- R Unreliable result - Analyte may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review.
- UL This analyte was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.
- NA Not analyzed.
- (5x) This element was analyzed for, but not detected; however, due to sample dilutions, the reported detection limit is equal to the "normal" detection limit multiplied by the factor in parentheses.

ANALYTICAL METHOD:

- P - Inductively Coupled Plasma
- F - Graphite Furnace Atomic Absorption
- CV - Cold Vapor Atomic Absorption
- AS - Auto Analyzer

INORGANIC ANALYSIS - ANALYTICAL RESULTS - FILTERED MONITORING WELL DATA

ERM-North Central Sample Number		LO-201S-FB	LO-201S-GW	LO-201D-GW	LO-204S-GW	LO-204S-GWDUP	LO-204D-GW	LO-202S-GW	LO-205D-GW	LO-202D-GW	LO-208S-FB
Laboratory Sample Number		02127-01	02127-02S	02127-03S	02127-04S	02127-05S	02127-06S	02127-07S	02127-08S	02127-09S	02127-10S
Remarks		Filtered	Filtered	Filtered	Filtered	Filtered	Filtered	Filtered	Filtered	Filtered	Filtered
Sample Delivery Group		212701	212701	212701	212701	212701	212701	212701	212701	212701	212701
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
INORGANIC ELEMENTS	Detection limit	Field Blank				Duplicate of LO-204S-GW					Field Blank
Aluminum P	66.0					171		178	81		
Antimony P	31.0										
Arsenic F	2.0		15.5	3 J	31.2	23.2					
Barium P	1.0		99.8 J	27.2 J	42.6 J	43.2 J	54.7 J	52 J	84.8 J	45.9 J	
Beryllium P	1.0										
Cadmium P	1.0										
Calcium P	92.0		152000	176000	203000	200000	156000	151000	141000	159000	126
Chromium P	2.0					2.9 U					
Cobalt P	3.0										
Copper P	3.0										
Iron P	35.0		1840 J	2180 J	473 J	873 J	1980 J	1610 J	2260 J	2310 J	47.3 J
Lead F	2.0	1.7 J			1.1 U	1.8 U	1.1 U	2.6 U	1.4 U	1.7 U	2 J
Magnesium P	69.0		78300	95100	224000	221000	78500	72900	70100	80100	
Manganese P	1.0	1.5	314	63.7	363	360	50.4	284	107	55.7	1.3
Mercury C	0.20										
Nickel P	4.0		6.9		9.9	12.3		11.1			
Potassium P	76.0		5510	3920	49900	49300	4960	5380	9370	5310	117
Selenium F	4.0	UL		UL	UL	UL	UL			UL	
Silver P	5.0			5.4	16 R	15.5 R					
Sodium P	34.0	172	258000	32300	861000	852000	165000	195000	199000	89100	199
Thallium F	3.0	R	R (5x)	R (5x)	R (5x)	R (5x)	R (5x)	R	R	R	R
Vanadium P	3.0				5	5.3					
Zinc P	11.0					14.6 U					
Cyanide AS	10.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

NOTES:

- Analyte was not detected.
- U This analyte should be considered "not-detected" since it was detected in a blank at a similar level.
- R Unreliable result - Analyte may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review.
- UL This analyte was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.
- NA Not analyzed.
- (5x) This element was analyzed for, but not detected; however, due to sample dilutions, the reported detection limit is equal to the "normal" detection limit multiplied by the factor in parenthesis.

ANALYTICAL METHOD:

- P - Inductively Coupled Plasma
- F - Graphite Furnace Atomic Absorption
- CV - Cold Vapor Atomic Absorption
- AS - Auto Analyzer

EXTRACTABLE ORGANIC ANALYSIS - ANALYTICAL RESULTS - MONITORING WELL DATA

ERM-North Central Sample Number	LO-	2106DR-GW	2101L-GW	2101M-GW	2101D-GW	2102L-GW	207D-GW	207S-GW	2102D-GW	205S-GW	205S-GW	205D-GW	203S-FB	2105S-GW	203S-GW	203S-GWDUP	203D-GW	2-TB4
Laboratory Sample Number		A21008 -0014	A21008 -0005	A21008 -0006	A21008 0007	A21008 -0008	A21008 -0009	A21008 -0010	A21008 0001	A21008 0002	A21008 0003	A21008 0004	A21047 -0001	A21047 -0002	A21047 -0003	A21047 -0004	A21047 -0005	
Remarks																		
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	uc/L	ug/L	ug/L
AROCLORS	Quant. Limit												Field Blank			Duplicate of LO-203S-GW		Trip Blank
Aroclor-1016	1.0	UL		UL				UL				UL						NA
Aroclor-1221	2.0	UL		UL				UL				UL						NA
Aroclor-1232	1.0	UL		UL				UL				UL						NA
Aroclor-1242	1.0	UL		UL				UL		56		UL		160				NA
Aroclor-1248	1.0	UL		UL				UL				UL						NA
Aroclor-1254	1.0	UL		UL				UL				UL						NA
Aroclor-1260	1.0	UL		UL				UL		51		UL		97 J				NA
Quantitation Limit Multiplier		1.04	1.08	1.08	1.08	1.04	1.04	1.04	1.04	22	1.04	1.06	1.04	110	1.12	1.16	1.14	NA
Date of Sample Collection		2/18/92	2/18/92	2/18/92	2/18/92	2/18/92	2/18/92	2/18/92	2/18/92	2/18/92	2/18/92	2/18/92	2/18/92	2/19/92	2/19/92	2/19/92	2/19/92	NA
Date Sample Received by Laboratory		2/19/92	2/19/92	2/19/92	2/19/92	2/19/92	2/19/92	2/19/92	2/19/92	2/19/92	2/19/92	2/19/92	2/19/92	2/20/92	2/20/92	2/20/92	2/20/92	NA
Date Sample Extracted		2/21/92	2/21/92	2/21/92	2/21/92	2/21/92	2/21/92	2/21/92	2/21/92	2/21/92	2/21/92	2/21/92	2/21/92	2/24/92	2/24/92	2/24/92	2/24/92	NA
Date of Sample Analysis		3/6/92	3/6/92	3/6/92	3/6/92	3/6/92	3/6/92	3/6/92	3/6/92	3/6/92	3/6/92	3/6/92	3/6/92	3/12/92	3/12/92	3/12/92	3/12/92	NA

NOTES:

- Compound was not detected.
- U This compound should be considered "not-detected" since it was detected in a blank at a similar level.
- R Unreliable result - Compound may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review.
- UL This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.
- NA Not analyzed.